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ABSTRACT

To improve its cultural development, increase the economic efficiency of its public investment, and optimize equality of opportunity, Kentucky must introduce a new State school finance program. Such a program should provide for more efficient use of the public dollar, establish a framework wherein the public can measure school productivity, return enough educational decisionmaking to the local level to enhance community involvement in the schools, increase the State investment in education to maximize the public benefit, and equalize educational opportunity among all children of the state. Major advances have been made in the educational opportunities being provided for the public school children in Kentucky, but the finance law which was adequate for the 1950's and 1960's will not necessarily meet the needs of the 1970's and 1980's. Kentucky is not unique in this respect, for virtually every State is involved in a major study of its school finance program. An overview is presented of the principal technical studies which have been conducted as a part of Kentucky's search for methods to improve its school finance program. In each instance recommendations or conclusions have been developed based on the work of the Citizens Advisory Council, the reports submitted for each technical study, and the experience and professional judgment of the staff of the National Educational Finance Project. (Author/DN)

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FINANCING THE PUBLIC SCHOOLS OF KENTUCKY

A Study Made By

THE NATIONAL EDUCATIONAL
FINANCE PROJECT

THE KENTUCKY DEPARTMENT OF EDUCATION

and the

CITIZENS OF KENTUCKY

1973

EA 006 133

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FOREWORD

This report is the product of intensive study by the citizens of Kentucky with the assistance of the Kentucky Department of Education in cooperation with the National Educational Finance Project. The research for the study was financed by the Kentucky Department of Education and the National Educational Finance Project. A citizens committee of 100 along with thousands of others throughout the Commonwealth of Kentucky provided the educational concepts on which the recommendations contained herein were based.

The overall study was administered by James Melton, Arnold Guess, and Thomas Hagler of the Kentucky Department of Education, and the research was designed and coordinated by Kern Alexander and K. Forbis Jordan of the National Educational Finance Project. The following persons made special studies which provided the findings supporting the recommendations.

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June 25, 1973

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PREFACE

There is little doubt that education is the most important function of state government. Without an educated citizenry the American form of government itself could not survive. Public education is important, however, for reasons other than the perpetuation of our democratic form of government; it is also essential for the furtherance of our culture, for the economic development of the state and nation, and for the promotion of equality and social mobility.

Public education of all people of the state advances the culture through the teaching of moral and ethical character and developing an appreciation for civilization. Education passes from one generation to the next the accumulated knowledge and culture of man, a respect for humanity, and an appreciation for organized society. Although these functions of education are not easy to measure, their overriding importance is undeniable and public education as a vehicle to attain them cannot be seriously disputed.

Public education is also desirable from an economic point of view. Common school education provides the opportunity for all individuals to secure livelihood and establish personal economic independence. Aside from the private and personal benefits, however, free education has vast external benefits to society. Funds for an educational investment provided by government return economic benefits many times the original investment. A state which underinvests in education greatly reduces its economic development in the future.

Various studies have documented the very high economic return to the state on an investment in elementary and secondary education, rates ranging from 25 percent for secondary education to in excess of 35 percent for elementary education. Much lower returns are gained on investment in higher levels of education and in most other governmental functions. Kentucky is presently underinvesting in elementary and secondary education. Failure to invest early in education not only diminishes the public and private return on the investment but results in added governmental expenditures for welfare and crime prevention at a later time.

It is the responsibility of the state, through education, to provide for equality of opportunity to develop children's talents to the greatest extent possible. National Educational Finance Project studies have shown that school districts having fewer funds are also the school districts which have lower achievement and lower aspiration levels. School districts which provide more funds for schools are also the districts which have higher employment status and greater per capita personal income. Even though Kentucky has done much in the past generation to equalize fiscal resources among school districts, substantial inequality still exists.

If Kentucky is to improve its cultural development, increase the economic efficiency of its public investment, and optimize equality of opportunity, then it will be necessary for the state to introduce a new state school finance program which will provide for more efficient use of the public dollar establish a framework within which the public can measure the productivity of the schools return as much as possible of the educational decision making to the local level so as to enhance community involvement in the schools increase the state investment in education in order to maximize the public benefit which can be derived from an adequate investment in public education and equalize educational opportunity among all children of the state by funding a uniform educational program throughout the state and providing equal access to the fiscal resources of the state.

SUMMARY OF

MAJOR RECOMMENDATIONS

I. Determine foundation program educational allotments by the Pupil-Cost Unit approach.

II. Provide special cost units for handicapped children programs, vocational education, kindergarten, remedial reading, grades 1 and 2, and grades 9 through 12.

III. Increase teachers' salaries over the biennium to a level equal to the average of surrounding states.

IV. Create a state school building authority to provide funds for capital outlay.

V. Provide full state funding for the adjusted cost of transportation.

VI. Require all school districts to operate a K-12 educational program and implement a local school district organization study plan.

VII. Increase the total value of the foundation program by $120 million per year.

VIII. Fund the program by adjusting the state income tax upward and increasing the required local effort from 30 cents to 50 cents.

IX. Create an Educational Resource Management System consisting of the following:

A statewide uniform achievement testing program

A program-oriented fiscal accounting system

A program-oriented pupil accounting system

IMPROVING KENTUCKY'S SCHOOL FINANCE PROGRAM

Introduction

Several major changes are needed in Kentucky's Minimum Foundation Program (MFP). The present program contains several complications which have accumulated over the years. Local boards of education do not have the flexibility needed to implement innovations and utilize various options in delivering educational programs and services. Possibly the most severe problem is that the MFP has never fully equalized educational resources within the state; districts with high levels of per pupil wealth have continued to remain in a favored position in terms of the amount of available dollars.

Major advances have been made in the educational opportunities being provided for the public school children in Kentucky, but the finance law which was adequate for the 50's and 60's will not necessarily meet the needs of the 70's and 80's. Kentucky is not unique in this respect, for virtually every state is involved in a major study of its school finance program.

In the following discussion an overview is presented of the principal technical studies which have been conducted as a part of Kentucky's search for methods to improve itsschool finance program. In each instance recommendations or conclusions have been developed based upon the work of the Citizens Advisory Council, the reports submitted for each technical study, and the experience and professional judgment of the staff of the National Educational Finance Project.

EDUCATIONAL PROGRAM ALLOTMENT PROCEDURE

The entire educational process can be broken down into many functional components. However, the configurations of these components vary widely among school districts. In order to foster better education it is necessary for the state to develop a method of financing which identifies and supports the essential elements of the educational program without restricting local control and initiative.

State educational programs should provide the impetus for the establishment of programs for early childhood, special education for the handicapped, vocational education, and certain remedial programs. The inclusion of these programs is necessary to create greater opportunities for a definitive class of students with special needs, and secondly, these special programs have higher than normal costs requiring fiscal consideration. Ideally, the primary determinants on which the allocation process is based should be on the individual pupil's need, the programs to meet those needs, and the programmatic costs.

The heart of a state educational finance system is the manner in which it creates adequate and equal educational programs. Some state school finance programs ignore the basic educational program considerations and are diverted to peripheral considerations of administrative, supervisory and teachers' salaries, maintenance and operation, and transportation. Few states have developed methods of financing which are centered on the educational needs of children and the programs and funding necessary to accommodate these needs.

The desirable features of a state finance program are not difficult to summarize: The allocation formula should accommodate the educational needs of all children in the state. It should mandate a certain level of program but not restrict the local determination of program alternatives to reach this level. It should present a comprehensive and coordinated package with all elements of the program related to all others. And last it should lend itself to evaluation and accountability.

Recommendations

1. The present practice of allocating special units for handicapped children and Vocational Education should be continued. Identification of handicapped children, however, should be consolidated into fewer categories as indicated in Table 1. Additional special units should be included for the high cost programs of Kindergarten, Grades 1-2, Grades 9-12, and Remedial Reading. Criteria for children and definition of units should be established for all categories by State Board of Education Regulation. All identified units for which programs are provided at the local level should be funded as elements of the total program.

2. The Pupil-Cost Unit approach should be used for allocating funds in Kentucky. This method of allocation requires that each local school district identify each child in a designated need category and provide an educational program to meet the need. The state allocation program should be based on a programmatic description and cost formula as follows:

Number of Pupil Units (F.T.E.) x Cost Differential x Dollars = Total Cost of Program

The cost differentials recommended for use in this formula are drawn from actual practice in Kentucky as documented in other parts of this report and from data collected by the National Educational Finance Project. The cost differentials are summarized in Table 1.

Advantages of Pupil-Cost Unit Approach

The Pupil-Cost Unit funding approach has much in common with the classroom unit method presently used in Kentucky but has several distinct advantages over the present method. These are presented in capsule form in the following discussion.

a. Local school districts have greater flexibility in program operation because their funding is based on the pupil to be educated rather than on the presupposed instructional unit arrangement. The self-contained classroom is no longer the major focal point of the instructional process. Educational innovators advocate the movement to large group-small group and individualized instruction. While the present Kentucky Foundation Program does not preclude such arrangements, it is certainly suggestive of the more traditional classroom unit approach to teaching.

b. The Pupil-Cost Unit method does not rely on given pupil-teacher ratios. This approach completely avoids the continuous argument over class size and the lowering or raising of pupil-teacher ratios. Research is certainly not conclusive on the impact of class size on learning; therefore, it is better to avoid the argument if possible.

c. The Pupil-Cost Unit establishes a uniform program where all components are related through interaction of educational needs and costs.

TABLE 1. Recommended Cost Differentials for Incorporation Into Computation of Kentucky Foundation Program

Program	Current Cost Index in Kentucky[1]	Reasonable Range[2]	Recommended Cost Index[3]
I Kindergarten	1.05	1.05 - 1.30	1.10
II Grades 1 - 2	--	1.00 - 1.30	1.30
III Grades 3 - 8	1.00	1.00	1.00
IV Grades 9 - 12	1.11	1.10 - 1.47	1.20
V Special Education			
Physically Handicapped	1.54 - 1.70	1.54 - 3.64	3.25
Mentally Handicapped	1.68 - 1.73	1.49 - 2.33	2.00
Emotionally Handicapped	1.60	1.60 - 2.90	2.80
Speech Handicapped	1.62	1.18 - 1.62	1.62
Home and Hospital Instruction	2.36 - 2.58	2.36 - 2.58	2.50[4]
Multi-Handicapped	1.65	1.65 - 2.29	2.00
VI Remedial Reading (Grades 1-12)	2.23	1.58 - 2.35	2.30
VII Vocational-Technical Programs			
Business Education	1.39	1.39 - 1.95	1.39
Distributive Education	1.50	1.42 - 1.52	1.50
Trades and Industries	1.65	1.47 - 2.91	2.20
Health Occupations	1.60	1.42 - 2.67	1.60
Agriculture	2.13	1.56 - 2.61	2.13
Home Economics	1.44	1.38 - 1.68	1.44

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[1] See Special Study on Cost Differentials.

[2] Range of differentials as indicated by NEFP research.

[3] Based on NEFP Phase II research in selected states.

[4] Assuming home and hospital bound children are counted as in average daily attenance.

A definite relationship exists in the funding pattern between the basic educational unit costs and each of the special high cost units.

d. The proposed method is based on actual cost analysis of current practice in program financing in Kentucky and additional research conducted by the NEFP. Although the weighted classroom unit approach now used in Kentucky has served well, the weightings are based on subjective judgment not actual costs.

e. There is no necessity to continue to mandate the endless array of ASIS and other special units since the total programmatic costs are included in the cost differentials. Adequate and coordinated funding is provided at the teacher, supervisor, central office administration, and superintendent levels.

f. Under the current classroom unit method of allocation a local school district with less than a minimum unit is allocated no additional funds for special need children. If the district has a sufficient number of pupils in a particular program to approach the upper limits of the pupil-teacher ratio range, then it is not allocated additional funds. Therefore, a decided advantage is obtained by funding pupil units rather than classroom units.

g. The Pupil-Cost Unit approach creates a complete cycle from the state funding pattern through the pupil accounting system. Kentucky has recently implemented and computerized probably the most sophisticated pupil accounting system of any state, but at the present time the system is not related to the foundation program method of allocation. To adopt the

Pupil-Cost Unit approach would create a complete system whereby allocation, program costs, and pupil-costs are all related and subject to evaluation. The creation of the system would allow constant evaluation of the cost differentials and permit rational change and adjustment yearly, if necessary. This system would also provide the cost base for the establishment of an Educational Resource Management System.

h. The Pupil-Cost Unit is more efficient and precise in measuring the time usage for various educational programs. By breaking the education program into smaller time units described in Full-time Equivalents, the chance of duplicate funding by the state is lessened.

TEACHERS' SALARIES

Teachers are the heart of the educational process. Each day the lives and education of thousands of children are entrusted to the teachers. The importance of the teacher is such that the courts have for a hundred years held that teachers stand in place of the parent, in loco parentis. Yet, even with this great importance to the child and the future of the state and country vested in the teacher, payment for teachers has been relegated to a level comparable to that of common laborers.

Teachers' financial remuneration not only does not reflect the great societal responsibility of educating, training, and protecting our children; but the great personal investmentof the teacher in becoming certified is also ignored. Where the hod carrier, the common laborer or many other workers in our society can begin work at almost anytime in life and start receiving economic returns immediately, the teacher must invest his time and resources in four years and generally five years of college. Not only does he suffer economic loss from travel, tuition, and other costs attendant to a college education; but he must in addition also incur loss of income, income foregone, for the years he is not on the work force. The net result of this phenomenon is that a person who desires to become a teacher must make a *personal* economic sacrifice, to attain state required standards, which he can never hope to recover. Salaries should therefore be paid which are sufficient to compensate teachers for their personal economic commitment and which are commensurate with their *in loco parentis* responsibility of protecting and educating the state's most important asset, its youth.

NEFP research indicates that higher teachers' salaries, greater teacher experience, and higher levels of training tend to be present in highly productive school districts. These considerations served as the basis for recommending that Kentucky adopt the following.

Recommendations

1. Classroom teachers' salaries should be increased, beginning with the 1974-76 biennium, by an amount sufficient to make Kentucky's average salary equal to the average of the seven states bordering Kentucky. The increases would enable Kentucky teachers to arrive at this comparable average salary by the second year of the two year period.

2. The legislature should recognize cost of living increases as a factor in allocating state education funds.

3. The provisions pertaining to allotments for instructional salaries in the Foundation Program would be eliminated under the proposed program. Each local school district would still be required to adopt a uniform salary schedule which provides salaries no less than the following state mandated minimums.

TABLE 2. Minimum Teachers' Salaries

	Level of Training			
	Bachelor's Degree		Master's Degree	
Experience	1974-75	1975-76	1974-75	1975-76
0-3 years	7,100	8,200	7,700	8,900
4-9 years	8,300	9,500	8,900	10,200
10 years	9,000	10,300	9,500	10,900

ASIS UNITS

ASIS units were originally included in the Kentucky Foundation Program as an add-on device to accommodate additional units which could not be accommodated as a classroom unit. There is no need for such units if Kentucky moves to a Pupil-Cost Unit method of allotment. The costs for ASIS units as a part of the educational program are included in the program cost differentials. A study of local district staffing revealed that

ASIS units and the other special units have proliferated to the point of absurdity; continued incorporation of such units into the foundation program merely heaps new restrictions and controls on local decision-making.

The contention that local school boards will be hesitant to provide ASIS units if they are not directly funded through the Minimum Foundation Program is questionable; for during the first year of the MFP Allotment (1956-57), 2,120.5 ASIS units were allotted, but local districts actually staffed 2,564.9 ASIS units in 15 different positions. The units staffed were 120 percent of the units allocated during the first year of the program. During the 1970-71 year 3,314.0 ASIS units were allotted and 5,107.1 ASIS units were actually staffed in 35 different positions in local school districts. Therefore, during the 1970-71 period, local school districts actually staffed 154 percent of the ASIS units allocated under the present program. These figures reflect the rapid growth in the use of ASIS units, the increasing inadequacy of the present allocation formula, and the willingness of the local school districts to staff ASIS units beyond the number allocated in the program.

Data indicate that seven school districts staffed the exact number of ASIS units allocated through the MFP. These districts were generally small and had limited local fiscal capacity. These seven districts were in sharp contrast to the 16 school districts that staffed ASIS units at or above 200 percent of the allocation, and one district was staffing in excess of 300 percent of its allocated number of ASIS units.

Recommendations

Existing patterns and predicted changes in the organization for instruction and staffing programs suggest the need for implementation of the following recommendations:

1. With the adoption of the Pupil-Cost Unit approach the direct allocation of funds for ASIS units should be discontinued.

2. Units for directors of pupil personnel and supervisors of instruction would also be discontinued to provide local school districts with increased opportunities for optional staffing arrangements.

PUPIL TRANSPORTATION

The current formula for providing state support for transportation to local school districts in Kentucky contains many desirable elements. A detailed analysis was made of the strengths and weaknesses which facilitate or impede funding mechanisms for local school district transportation programs.

Since the change of the transportation formula by the 1960 General Assembly, density and sparsity have been recognized in the allocation of transportation funds to local school districts. Factors such as terrain, road conditions, and other adverse situations are compensated for by either the density factor and/or the cost factor. In determining the cost of the Foundation Program for each district, a determination is made of the average cost per pupil per day of transporting pupils in districts in certain density groupings. The annual cost includes all current costs for each district plus annual depreciation of vehicles calculated in accordance with regulations of the State Board of Education.

In the computational process the aggregate daily attendance of transported pupils is divided into the annual cost to determine the cost per pupil per day. The density of transported pupils per square mile of area served for each district is computed by dividing the average daily attendance of transported pupils by the number of square miles of area served by transportation.

From the above data a curve of best fit is identified by plotting 10 points (or averages) for the county districts and 9 for the independent districts. This curve of best fit is used to ascertain the adjusted cost per pupil day. The final adjusted cost for each district is determined by multiplying the graph adjusted cost per pupil day times the aggregate pupil days transported. This figure is then equalized in the Foundation Program computation by subtracting the required local school district effort from the total of the various Foundation Program cost elements.

The present method of computation does not represent a curve of best fit, but represents a curve which goes through the average density and expenditures for each of the groups. The curve is very sensitive to change in these points. By moving districts from one group to another, the average expenditures and density for a particular group may be changed. This change could influence the average expenditures and density in either a positive or a negative direction.

The transportation program adopted in 1960 in Kentucky has worked well in upgrading and improving the state support for transportation, but fails to provide the full amount of funds needed by local school districts to support their transportation programs. In 1971-72 the total cost of transportation in the state, excluding federal funds was $18.5 million. After the cost of transportation had been computed and equalized according to the formula, local districts received $12.6 million for transportation through the Foundation Program. In essence, the state is paying $12.6 million or 68 percent of the total cost of transportation.

Recommendations

The present transportation formula combines equity with efficiency. The provisions for depreciating buses encourage local school districts to maintain safe equipment. An important aspect of the present formula is that its calculation is based on costs, which are self-adjusting for increases in cost of living. Only minor changes are, therefore, recommended.

1. The transportation formula should incorporate a weight for handicapped children. Costs for transporting these children are quite high due to special equipment, time, and personnel costs. The present formula should include an allocation weight factor for handicapped children of at least 5.00.

2. The present method of calculating the transportation allotment should be changed from using only 10 graph points to 120 points representing

all counties in Kentucky. This adjustment adds statistical preciseness to the formula and increases the objectivity of the formula.

3. The state should fully fund local school district transportation costs as computed through the graph adjusted formula. Under this arrangement transportation would be recognized as a legitimate additional expense which does not occur equally in all local school districts. Under the present arrangement local districts with transportation programs are required to use funds for transportation which otherwise could be used to support the instructional program. Full state funding of the graph adjusted cost for transportation would require the state to increase its contribution to the basic state aid program by approximately $3.4 million to offset the change in method of computing the transportation distribution.

4. The present practice of separate calculations for the graph adjusted cost in county and independent districts should be continued.

CAPITAL OUTLAY AND DEBT SERVICE

Kentucky's present state support for capital outlay and debt service is limited to an allocation of $1,300 per classroom unit. The amount is scheduled to be increased to $1,400 per classroom unit in the 1973-74 school year. This reflects an increase of $1,000 per classroom unit when compared with the allotment of $400 per classroom unit in 1954. These funds are supplemented by a variety of local funds.

Any local school board may request the tax levying authority to adopt an ordinance or resolution to submit to the voters a special school building tax of not less than 5 cents and not more than 50 cents per $100 of assessed property valuation. A simple majority is required for approval. In 1972, 102 districts were making use of this tax.

Districts may also levy a special voted tax for general purposes which may be used for any school expenditure including capital outlay. In 1972, 31 districts were utilizing this tax. The voters may also be asked to approve a sinking fund tax to be used to pay interest and create a sinking fund to retire bonds at their maturity. In 1972, three school districts were using this tax, and one was for the Ashland Junior College.

In the 1971-72 school year, the public schools of Kentucky expended $68,060,446.89 for capital outlay and debt service. Of this total $7,038,010.70 was from the general fund, $36,049,201.81 came from the special voted building taxes, and $24,973,234.38 from the capital outlay allocation in the Minimum Foundation Program. The average expenditure per classroom unit was $2,179.37. The range among the 90 districts was from $532.47 to $5,915.97.

Even though the basic intent of a capital outlay state grant is to provide funds for current construction, facilitate the retirement of past debt, and permit school districts to retain building reserves for future need, 80 Kentucky school districts were transferring capital outlay funds to the general fund in 1971-72. In 1969-70, the number of districts was 76 and in 1970-71 was 77. School districts with special voted taxes are permitted to transfer designated capital outlay funds to the general fund to be used for current operations. During 1971-72 the total Minimum Foundation Program capital outlay allocations from the state were $37,475,280. Local districts transferred designated capital outlay funds in the amount of $13,242,618.00 to the general fund for use in defraying current expenditures; this latter figure is 35 percent of the total Minimum Foundation Program capital outlay allocation from the state.

For the past five years voters in Kentucky school districts have followed the national pattern by rejecting proposals for special voted taxes. Since 1966, 40.7 percent of referenda for special voted taxes have passed and 59.3 percent have failed. During the period 1968-69 through 1972-73 the voters rejected over 73 percent of the requests.

The division of buildings and grounds in the Kentucky Department of Education has estimated the capital outlay needs as of December 1972 to be a total of $309,094,420.00. Of this total $294,964,420.00 was for new schools, additions, and renovations; $7,519,700.00 for administrative offices, bus garages, and other support facilities; and $6,610,200.00 for sites and improvements. In 1964-65 the backlog was estimated at slightly in excess of $200,000,000.00. The backlog has not diminished during the intervening period.

A detailed analysis of the school facility needs among Kentucky school districts indicates that some districts are experiencing enrollment increases and, therefore, have need for additional buildings while other districts have relatively stable or declining pupil populations and need new school facilities only for replacement of educationally obsolete buildings. In view of the variety of needs among districts, the uniform classroom unit for all districts does not seem appropriate. This factor has been recognized in the following recommendations.

Recommendations

In the following recommendations, the first is a continuation of the present program; the second would provide relief to districts with high levels of need for facilities.

1. The $1,400 classroom unit allocation should be changed to reflect a pupil-cost unit approach for allocating funds. The value of the pupil-cost unit allocation for capital outlay would be computed by dividing the appropriation by the number of pupil-cost units for the state.

2. The General Assembly should establish the Kentucky State School Building Authority under the control of the State Board of Education. The State Superintendent of Public Instruction would serve as the executive officer of the Authority. The purpose of the Authority would be to provide school construction funds for local school districts with a high incidence of need for facilities. The following operational procedures are proposed for the Authority.

   a. The legislative appropriation for the fund should be $6 million.

   b. All plans for buildings and for use of funds should be submitted to the State Department of Education for approval.

   c. Funds from the Kentucky State Building Authority should be made available only to local school districts that have met minimum standards of organization and administration for efficient and effective utilization of school facilities. In the allocation of funds from the Authority the following factors should be taken into consideration.

(1) Number of students in facilities being used beyond their capacity

(2) Number of students in temporary facilities

(3) Number of students in educationally obsolete facilities

(4) Age and condition of school facilities

(5) Relationship between the condition and internal features of the facilities and state approved instructional programs

d. Local school districts should develop and submit plans for construction projects to the State Department of Education for review and approval. Upon approval, funds should be advanced to the local districts for site purchase and architectural engineering fees. Additional funds should be allocated during the course of the project in accordance with the construction schedule.

SCHOOL DISTRICT ORGANIZATION

The progress of Kentucky school district reorganization in recent years has not been as rapid as in some other states. In 1915 Kentucky had 554 school districts. By 1935 this number had been reduced to 311. Currently there are 190 school districts in Kentucky; 70 of these are independent districts and 120 are county districts. In 1972 two-thirds of the independent districts and one-eighth of the county districts had fewer than 1,500 pupils enrolled.

Various research studies have identified major objectives of school district reorganization efforts. The commonly accepted objectives are:

1. The educational programs should be sufficiently comprehensive to meet the educational needs of each student.
2. The pattern of local district organization should be conducive to an equalization of educational costs without an undue tax burden accruing to any district.
3. Districts should be sufficiently large to facilitate the effective use of teachers and other professional personnel.
4. The organizational structure should promote the most effective use of tax dollars.

A detailed analysis of Kentucky school districts indicated that larger schools tended to have higher accreditation ratings, students from larger schools tended to enter and graduate from college more often than students from smaller schools, holding power of larger schools was greater than smaller schools, and administrative costs were higher in the smaller school district. The median current expenditure decreased for school district enrollment categories until the enrollment reached 5,000 pupils. At this point the median current expenditure increased and was considerably higher in school districts enrolling more than 10,000. The data did not indicate that a discernible relationship existed between district size and pupil-teacher ratio or the training of the professional staff.

Recommendations

A variety of approaches could be used to resolve the problems associated with small and inadequate school districts. In view of current conditions in Kentucky the following recommendations are presented:

1. All school districts should provide a program of education within the school district which spans grades 1-12.
    a. Districts not currently providing a grade 1-12 program of education should be merged with the appropriate contiguous school district.
    b. The merger of such districts should be in accordance with a plan developed by district boards of education of the affected school districts and upon recommendation of the Superintendent of Public Instruction, approved by the State Board of Education.
    c. The merger of such school districts should be accomplished on or before July 1, 1975.
    d. In the event that affected local boards of education are unable to reach agreement upon a merger plan, the affected school districts would be merged by the State Board of Education based upon a plan recommended by the Superintendent of Public Education.

2. In independent school districts having fewer than 2,500 pupils in average daily attendance, the county in which they are located and such independent school districts should form a joint study committee which would formulate a plan for merger of such school districts into proposed new districts.
    a. The study committee would consist of three members appointed by the county board of education who are residents of the county

school district, three members appointed by the independent board of education who are residents of the independent school district, three members appointed by the Superintendent of Public Instruction who are residents of the independent school district, and three members appointed by the Superintendent of Public Instruction who are residents of the county school district.

b. In counties with more than one such independent school, representation should be the same as in point "a" and a multi-district committee would be formed to develop recommendations for merger of the affected school districts.

c. Study committees formed under this legislation should be organized and functioning no later than September 1, 1974.

d. The plan for merger and the proposed district organization should take into consideration, but not be limited to:

   (1) The nature of program offerings among the various schools in the districts within the county.

   (2) Expenditure patterns by functional category for all school districts within the county.

   (3) Projected tax rates based upon previous years' expenditures and projected assessed valuations of property.

   (4) Proposed composition of the interim school board.

   (5) Proposed school board member districts.

   (6) Procedure for selecting the superintendent of the proposed district.

   (7) Procedures for assuming assets and liabilities of previously existing school districts.

e. The Superintendent of Public Instruction would provide technical assistance to the study committees.

f. By May 1, 1975, the study committees would have adopted a plan for merger of affected school districts.

g. During the 60 days following May 1, 1975, at least two hearings, with 30 day prior public notice, would be held in each of the affected school districts.

h. On or before July 1, 1975, the study committees would submit the proposed merger plan to the State Superintendent of Public Instruction for his review and recommendation for approval to the State Board of Education. Such action by the State Board should be taken on or before September 1, 1975.

i. The State Board of Education would have the authority upon the recommendation of the Superintendent of Public Instruction to revise the plan to conform with existing Kentucky Revised Statutes and State Board Regulations.

j. The question of merger of the affected school districts would be put upon the ballot of the general election of 1975, and voted upon by the voters of the independent school district. A simple majority of the valid ballots cast on the issue in the affirmative for merger would prevail and cause merger to be effected in accordance with the plan.

k. In counties having more than one affected independent district, the plan would be for all districts and voted upon as a single issue.

l. During the period between September 1, 1975 and the general election, the county school district would widely disseminate the provisions of the plan.

m. Affirmative votes for merger will be implemented no later than July 1, 1976.

3. At the session of the Kentucky General Assembly following the enactment of the legislation, the State Board of Education shall present a progress report to the General Assembly.

4. No provisions of this legislation shall in any way prevent voluntary school district mergers by local boards of education which are legal under currently existing legislation, and no provisions of this legislation shall nullify current statutes which permit the dissolution of school districts.

5. Plans for the development of multi-district regional service units should be continued and attention given to the determination of logical programs and services to be provided by such units.

6. Legislation should be enacted which would permit the merger of adjacent county school districts when a plan for merger has been adopted by the school boards and approved by the State Board of Education upon recommendation by the Superintendent of Public Instruction.

EXTENDED SCHOOL YEAR

As America has moved from an agrarian society schools have continued to close during the summer months as they did when children helped with planting and harvesting, but this school calendar is unnecessary in an industrial urban society which does not have peaks of production nor require extensive labor during the summer for school age youth. For these reasons, considerable interest can be found to support modifying the existing school calendar and extending the school year. Even though many of the early extended school year programs were discontinued because of excessive costs, the possibilities of economy are providing a new impetus for consideration of extended school year programs. Local school districts experiencing considerable growth or undergoing social changes view the extended school year as an opportunity to improve the process of instruction and also achieve economies in operation.

Research indicates that immediate savings are not possible for districts implementing an extended school year. During the transition period, costs will naturally be higher. Needed curriculum revisions will place additional demands upon teachers and various "start-up" costs will be associated with the introduction of the program. To provide additional assurances that the program will be initiated with a minimum of difficulty, authorities recommend that in-service programs be developed to permit teachers to plan the transitional activities so that the necessary curricular revisions will be made.

The advisibility of implementing extended school year programs for the purpose of acceleration is questionable because of the sociological and psychological problems affecting pupils. Increasing the length of the school year may increase the pressures upon students. Questions of the maturity of students and their ability to find jobs or enter college plague decision makers when they consider the extended school year options.

In Kentucky the greatest opportunities for economies in an extended school year program can accrue in the large metropolitan areas such as Louisville and Jefferson County, Lexington, and the greater Cincinnati area where the population of the state is tending to congregate because of job opportunities.

Recommendation

A single extended school year plan does not seem appropriate for all districts; therefore, the state should encourage pilot programs in several districts so that various types of plans may be demonstrated. The MFP could be modified to encourage the development of extended school year programs. For school districts experimenting with year round schools and considering the various options in extended school terms, the Minimum Foundation Program should provide flexibility for innovation and alternative scheduling for the school term. Therefore, average daily attendance should be computed as follows:

$$\frac{\text{Aggregate Days Attendance for FTE Pupils} \\ \text{From July 1 to June 30}}{175}$$

Part time pupils would be equated to full time equivalent (FTE) pupils in accordance with regulations established by the State Board of Education.

REVENUES FOR KENTUCKY'S SCHOOLS

State Revenue and Effort

The problem of raising revenue for Kentucky's schools has two primary aspects. The first and most perplexing problem is the lack of effort on the part of Kentucky to support its elementary and secondary schools and the second is Kentucky's low fiscal ability. The lack of effort, is of particular concern because it is controllable and can be remedied, but year after year it is not improved. In 1972, the expenditure per pupil in Kentucky was only 61 percent of the same figure for the nation. Comparing Kentucky's per capita personal income to the national average we see that Kentucky is a relatively poor state. But, when expenditure per pupil is compared to the per capita personal income of the state it is clear that Kentucky's effort is low regardless of its ability. Kentucky's effort last year, the ratio of expenditure per pupil to per capita income, was only 2.9 while the national average effort ratio was 3.9. For Kentucky to put forth the same effort as the average for the nation in 1972 would require an increase in elementary and secondary school revenues of nearly $120 million.[1] This much additional funding per year is certainly not unreasonably high since it is based on the national average and not on the effort of states showing the highest aspirations for education. Neither does it indicate an excessive effort for states having low fiscal ability like Kentucky. Mississippi, Idaho, and New Mexico, for example, are poor states but each has high effort, much higher than the national average.[2]

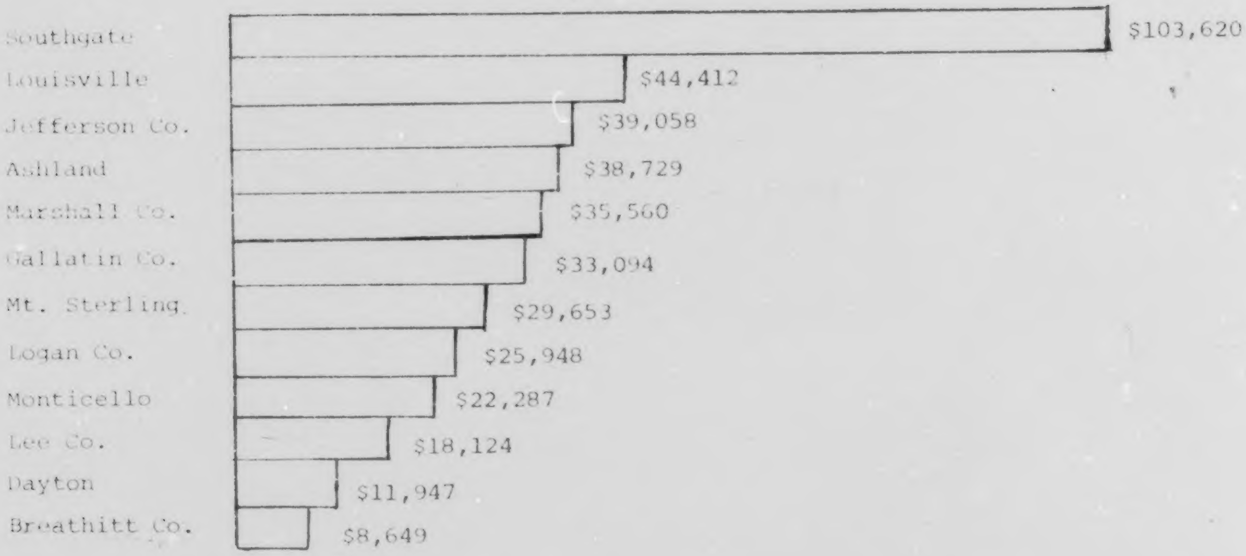
If Kentucky desires to do so, it can certainly put forth greater effort for elementary and secondary education as it has in the past for other governmental services such as highways and higher education. Kentucky has in the past made substantial effort, greater than the national average, for these very worthwhile governmental services. In Kentucky elementary and secondary education's share of the total general revenue of state and local government is 42nd in the nation. By any indicator, Kentucky has underinvested in its public schools.[3] The type of commitment exemplified by the state for highways and higher education exercised on behalf of elementary and secondary education would greatly enhance the educational opportunity afforded to Kentucky's children.[4]

Kentucky is not incapable of substantially increasing its effort as evidenced by National Educational Finance Project and Advisory Commission on Intergovernmental Relations studies. The NEFP has estimated that Kentucky could raise an additional $191.3 million dollars by simply adjusting its personal income tax rate upward to the reasonable level such as used by Oregon.[5] In addition to this amount, additional revenues can be obtained by not deducting federal tax from the personal income tax. Assuming that Kentucky has exhausted its sales tax potential at its current 5 percent and can obtain no additional revenues there, it has substantial additional potential from its local property tax. In 1970-71 only two states in the nation had lower property tax effort than Kentucky.[6] Other revenues could be obtained from a reasonable state corporate income tax and cigarette tax.

Local Revenues and Effort

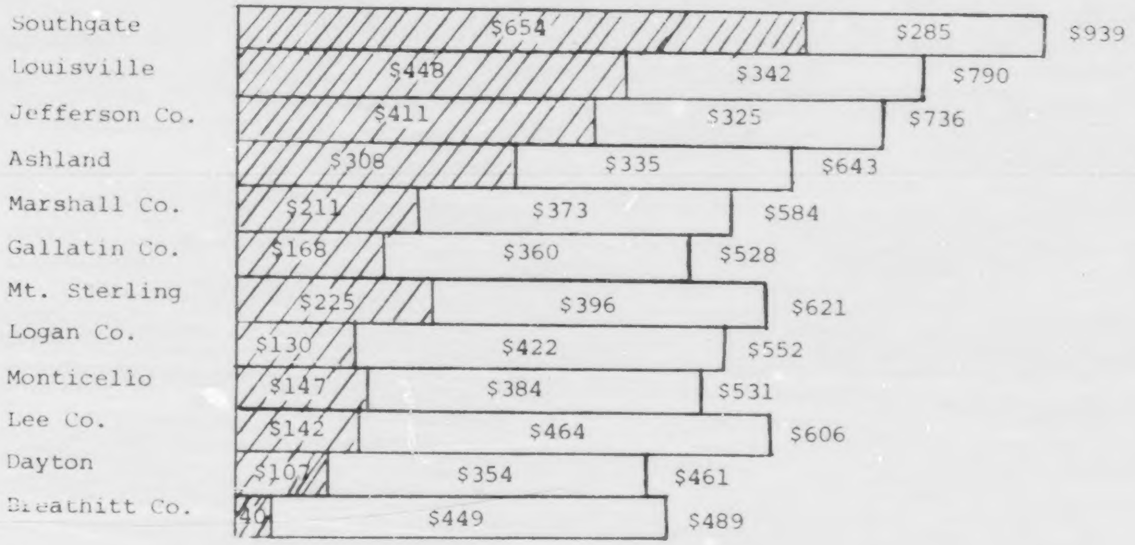
Twenty years ago the Kentucky legislature enacted a Foundation Program for elementary and secondary education. This fiscal mechanism combined state and local tax resources to finance a minimum state prescribed educational program. Through the years as state funds have increased this program has provided increasing levels of equalization among school districts. Since educational funds derived locally reflect the wealth of the district, the principal role of any state formula is to create equity for all children by reducing the fiscal disparity among school districts. In this respect the present Kentucky program has made significant strides. Even though the richest school district in the state has 12 times the ability of the poorest, when state and local resources are combined the actual revenue available per pupil between richest and poorest is only about 2 to 1. See Chart 1 and 2. However, the differential between rich and poor, although reduced during the years, is still not inconsequential. The average child who happens by birth or circumstance to be attending school in the poorest district receives only one-half of the services provided for the child in the wealthy district. In terms of per pupil cost this differential of only about $500 to $1,000 is not too striking, however, expressed in teacher or classroom units this means that the wealthier district has $27,000 to provide an excellent program while the unfortunate children in the poorer districts' classes have only $13,500 and certainly a minimum program. This can and does make a substantial difference in attracting good teachers, providing better learning materials and giving

CHART 1. Assessed Valuation of Property per Child in ADA for Selected School Districts, 1971-72



Source: *Public School Financial Analysis*, Kentucky Department of Education, 1971-72, p. 51.

CHART 2. Local and State Revenue Per Child in ADA for Selected School Districts, 1971-72



Source:

▨ Local

☐ State

the children an overall qualitatively better education.

The variation in revenues among local school districts is, of course, largely created by the failure of the state to fully compensate for the wealth disparities among school districts. As indicated by the profile in Chart 2, state funds are generally allocated inversely proportional to the wealth of the school district resulting in overall equalization. The state program, however, falls short on equalization where it does not provide sufficient resources to bring the poor school districts up to the level of the richest districts. Even though the wealthiest district has 12 times the resources of the poorest, the poorest district receives less than twice as much state dollars as the richest. Fiscal effort at the local level, of course, plays a role in the amount of local funds available; however, as indicated in other portions of this study, high effort is a phenomenon found in more progressive, wealthy and better educated areas of the state. This suggests that the poor people who have less education must be induced by state action to have better schools.

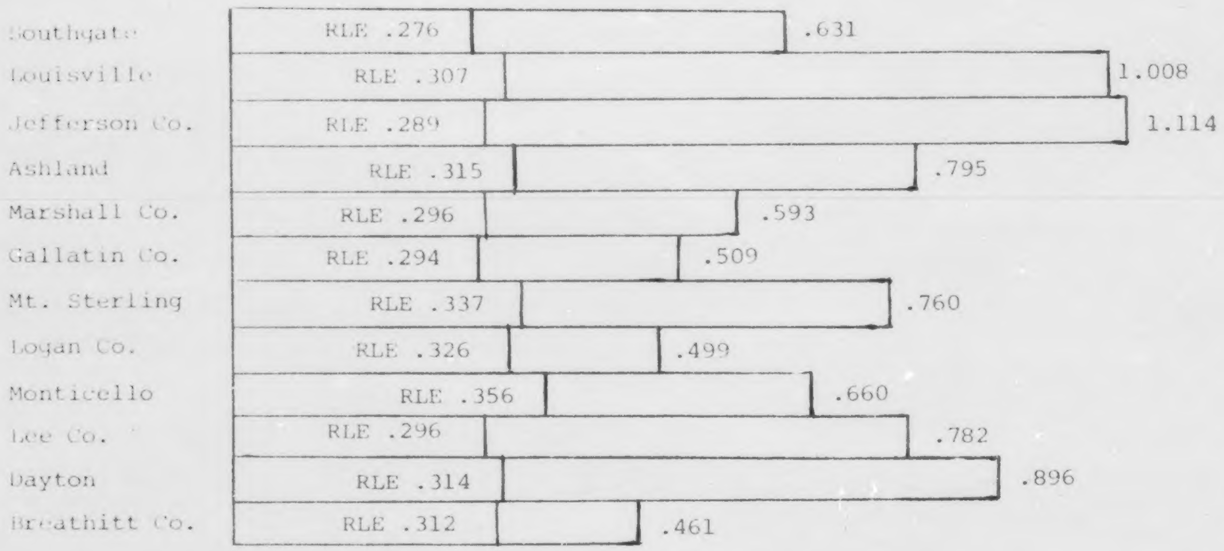
The local funds shown in Chart 2 represent both those funds required by the state for foundation program purposes and other local leeway funds. Since the required local effort is uniform and based on assessed valuation of property, it is equalizing money. If we disregard guarantee funds for wealthy districts we find that state funds are allocated almost precisely inversely proportional to the required local effort. It is, therefore, the local leeway funds which create the variations in revenues. These are the funds gained from local levies exceeding the required local effort.

Because of fluctuations in the equalized assessed valuation of property the uniform required local effort varies upward or downward depending on the level of assessment of the school district. Consequently, the tax rate to raise the required local effort for 1971-72 ranged from a low of .237 per 100 dollars assessed valuation to a high of .395. Chart 3 shows the foundation program rate and the total effective tax rate by selected school districts. Lynch Independent has the highest effective tax rate of any school district in the state with 1.562 and Whitley has the lowest with .261 (not shown in Chart 3).

The most obvious observation which can be made from Chart 3 is that local district tax effort to support education is certainly not uniform. Some districts are willing to pay much more for education than others. However, more pertinent to the problem of equalization is to note that though Southgate is 12 times as wealthy as Breathitt County, only .276 of Southgate's .631 tax rate is fiscally equalized. In other words, only those funds derived from a .276 rate are deducted for equalization purposes while .355 is wholly retained by Southgate itself. Another example, Jefferson County has a higher total effective tax rate of 1.114 of which only .289 is charged back for equalization purposes. The widest variation is in Lynch in which the total effective tax rate is 1.562 and the required local effort rate is only .288.

These differentials raise the involved question of how should a state fiscally equalize among its school districts. Should it limit those districts with high aspiration from levying greater local rates by

CHART 3. Required Local Effort and Total Effective Tax Rates Levied By Selected Local School Districts, 1971-72



Source: Public School Finance Analysis, Kentucky Department of Education, 1971-72, p. 52-53.

placing an absolute millage cap? Or should the state allow such local initiative and fiscally equalize the rate at whatever level it is set by local prerogative? In any case one can readily see that the state cannot fiscally equalize up to the district with the highest rate without expending substantially more state dollars. On the other hand to limit local districts overall taxing power or to level down from the high expenditure districts creates great political and educational problems. The ultimate solution to this equalization dilemma lies in the more reasonable organization of school districts coupled with greater state and local fiscal effort to support the schools. With larger school districts the wealth differential between richest and poorest is substantially reduced. Additionally, raising the state's effort for elementary and secondary education by providing greater state tax support accompanied by an increase in required local effort would further equalize by raising the value of the program.

Local Nonproperty Taxation

Moore[7] has shown that the revenues derived from nonproperty taxes have a significant disequalizing effect on school resources. Use of the three permissive nonproperty taxes in Kentucky, occupational, utility, and excise, greatly increases the differential in funds per pupil between rich and poor districts. Fayette County, for example, could expect to receive $56 Per child in ADA from the levy of the occupation tax while the yield of such a tax in Breathitt would only amount to $6 per child. The yield from the utilities tax in Fayette County would be $33 per child while Breathitt would receive only $2. The potential yield from the excise tax would have a similar result yielding $47 per child in Fayette and only $3 per child in Breathitt. Depending on the tax the disparity in yield between rich and poor ranges between 9 to 1 and 16 to 1. Since the variation in property values between the richest and the poorest is 12 to 1, the disequalizing features of the nonproperty tax are at least as bad and probably worse than property taxes.

Federal Funds

Federal funds have a substantial impact on Kentucky's schools. Title I of the Elementary and Secondary Education Act provides the greatest amount of funds of any federal source. For 1971-72, Kentucky received over $40 million from Title I amounting to $60.46 per pupil. Expenditures from major federal programs are shown in Table 1.

TABLE 1. Expenditures from Federal Programs and Amount Per Pupil in ADA for State, 1971-72.

Program	Amount	Amount Per Pupil
Title I, ESEA	$40,129,040.78	$60.46
Title III, ESEA	1,782,004.31	2.68
Title III and V-A NDEA	56,101.73	.08
Other Federal Funds through State	4,225,016.89	6.37
Public Law 815	156.80	-
Public Law 88-452 (Head Start)	2,920,186.31	4.40
Other Transfers	10,728,440.49	16.16

Of the total of over $493 million in receipts for elementary and secondary schools over $88 million or 17.8 percent was from the federal government. This percentage far exceeds the national average for all states which is approximately 7 percent.

All of the federal categorical funds are allocated to solve some perceived national problem. The funds are not allocated for general equalization purposes. Each subvention is directed toward a special student population and the funds are to be used for those children alone. As in the case of Title I, ESEA, federal funds generally may not be used to supplant state or local funds. An additional source of revenue for Kentucky's schools may be found in recent federal revenue sharing enactments. The state should recognize that these resources present an excellent opportunity for Kentucky's schools to raise their level of education.

Recommendations

1. State and local revenues for public schools in Kentucky should be increased by approximately $120 million per year. This increase would bring Kentucky's effort for public schools nearer the national average providing an adequate educational opportunity for Kentucky children.

2. Additional revenues for the state school finance program should be largely raised from increases and adjustments in the state personal income tax. As indicated in this study, Kentucky has much more income tax potential which should be utilized primarily to raise the level of educational opportunity in the state.

3. Required local effort should be increased from its present level of approximately 30 cents per 100 dollars assessed valuation to 50 cents. The first year (1974-75) of the biennium the required local effort could be increased to 40 cents and moved to the full 50 cents for 1975-76. The required local effort would be subtracted from the total cost of the program as established by the Pupil-Cost-Unit approach recommended earlier. Enactment of this recommendation would substantially increase equalization, narrow the wide range of effort now present among the school districts, and provide additional local revenue from the lagging property tax effort in Kentucky.

4. The permissive local nonproperty taxes should be uniformly levied at the state level with the revenues being allocated to local school districts through the state foundation program. Such a change would create greater equity and uniformity of taxation for taxpayers and result in enhanced fiscal equalization among school districts.

5. In the future, Kentucky should enact legislation to fiscally equalize the tax leeway funds among all districts. This would require the establishment of a percentage equalizing formula in addition to the foundation program, which would fully fiscally equalize all levies above the 50 cents required local effort. Such a program although requiring funds substantially in excess of the above $120 million program, would create "fiscal neutrality" for all school children in Kentucky.

FOOTNOTES

[1] Estimates by National Educational Finance Project based on data from Estimates of School Statistics, 1972-73, NEA, pp. 5, 26, 32, 34, and Survey of Current Business, US. Census Bureau, April 1973, Vol. 53, No. 4, p. 17.

[2] Alternative Programs for Financing Education, National Educational Finance Project, Vol. 5, 1971, p. 72.

[3] Ibid, p. 74. See also Rankings of the States, 1973, National Educational Association, pp. 53-56.

[4] Ibid. See also other portions of this study.

[5] Johns, Goffman, Alexander, Stollar, Economic Factors Affecting the Financing of Education, National Educational Finance Project, Vol. 2, 1970, p. 70. As updated by Juhan Mixon, NEFP, for 1972.

[6] Rankings of the States, 1973, NEA, Research, p. 44.

[7] Duane O. Moore, "Local Nonproperty Taxes for Schools," Status and Impact of Educational Finance Programs, Vol. 4, National Educational Finance Project, Gainesville, Florida, 1971, pp. 217-219.

THE NATURE OF SCHOOL DISTRICT FISCAL EFFORT IN KENTUCKY*

School districts throughout the nation exhibit widely varying local tax effort for support of the public schools. In all states, except Hawaii, local school districts have been given the authority to levy additional taxes, by board action or by vote of the people, for the improvement of their own schools. In most instances, this takes the form of optional levies beyond a required minimum levy for state foundation program purposes. The practice by states of allowing local discretion in the levy and use of additional taxes is therefore quite well established and is the chief element commonly considered necessary if local control of education is to exist. It is, however, with regard to this local power that significant questions have been raised about equalization of educational opportunity. Many commentators believe that the incidence of fiscal effort for education is closely associated with economic and social conditions which tend to place the more affluent and knowledgeable in a preferred position. For example, one may suspect that an educated person in the middle or high income bracket is more likely to vote for higher school taxes than an uneducated, low income person. While such speculations certainly seem reasonable, it is interesting that no studies have conclusively identified the true nature of school fiscal effort.

The lack of definitive research findings in this area is probably largely attributable to the lack of necessity for such studies. To date, interest in effort has apparently emanated from failures of school bond elections. Today, however, there is a new impetus for a close look at the nature of effort. This has come about as a result of the recent court decisions holding several state school finance programs unconstitutional.

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The courts have observed that in many instances the high wealth school districts are putting forth less effort than poor districts.[1] This phenomenon has been found principally where districts are so wealthy that they can have superior schools without taxing themselves heavily. On the other hand, it has also been noted that some poor school districts put forth little effort, possibly because increased levies bring such meager returns.

Some recent state court decisions have established that a child's education cannot be a function of the wealth of a local school district--the state must be fiscally neutral in its treatment of children. Several methods of funding have been proposed as constitutional alternatives, some of which make the child's education a function of effort rather than of wealth. Since the nature of school fiscal effort is so elusive, it may be hazardous to adopt a method of financing that makes a child's education largely dependent on it. Where effort is totally dependent on local aspiration, the child's education may be subject to disinterest, politics, or ignorance. The concept of state responsibility for education suggests that the state has an affirmative duty to intervene and limit effort in order that the low aspiration of parents and neighbors will not condemn children to inferior educational opportunity. This argument would be particularly potent if it could be shown that low economic level coupled with low educational aspiration creates a cycle of inadequate educational opportunity in a community.

As observed elsewhere in this study, the effort of school districts is of particular importance to the school children of Kentucky since the enactment of the so-called roll-back law. The roll-back law has created a situation where the child's education is a function of the effort as established by boards of education half a decade ago. Every school district in the state of Kentucky is frozen to a different tax rate which can be increased only by a vote of the electorate. The current school boards are powerless to respond to education needs by increasing tax levies.

The Kentucky Foundation Program Study Committee is confronted with devising alternative methods of financing public schools. A major factor in devising alternatives is the effort dilemma. Briefly, alternatives for combining state and local resources to finance the schools may be classified as (1) full state funding, (2) foundation program with optional additional equalized levies, and (3) unlimited percentage equalizing. If the state chooses to implement a system of full state financing, then questions of local school fiscal ability and effort are moot since the local district is denied the power to tax. However, in both the second and the third alternatives, the question of effort becomes paramount. With the foundation program supplemented by equalized grants, the local district retains taxing power to exceed the state mandated minimum. Even though additional local tax leeway is fully equalized, wide variations in effort may be expected beyond the minimum. This, of course, may result in wide variation in expenditures per pupil among the school districts. The dilemma is to determine a reasonable level of allowable local tax leeway. Should it be set high above the floor established by the foundation program or should it be quite limited?

To know the nature and impact of effort is even more acute if the state selects the third option, where the state chooses not to establish a minimum required local effort or a maximum level of tax effort. This open-endness would provide full equalization of all funds raised, but it would not require that the local districts put forth any effort at all, nor would it limit those districts that want to exercise unrestricted high effort. Under such a system the child's education would be a function of effort.

OUTLINE OF STUDY

In this study we will illustrate the variations in effort among Kentucky school districts, review relevant studies in which effort has been analyzed, report the results of our own examination of effort in Kentucky, and draw conclusions regarding allowable effort limitations.

STUDIES SUGGESTING EFFORT RELATED VARIABLES

The purpose of this review of related studies was to identify variables which may have some relation to school district fiscal effort. Such an inquiry led us to examine not only the direct studies of effort but also studies suggesting variables which may be associated with effort. As a result we reviewed several studies which were designed to identify the determinants of school expenditures.

Variables Related to School Expenditures

Hickrod studied school districts in five major metropolitan areas.[2] He found that these variables had statistically significant correlations with expenditures in most metropolitan areas: expenditure per pupil, assessed property valuation per pupil, educational tax rate, percent college educated, median family income, and an occupational index. He found further that there are clusters of contiguous advantaged school districts that are geographically separate from clusters of disadvantaged school districts. He said, "There is evidence of increasing determination of local levels of spending by the material and human resources present in the various school districts."[3] Also, certain types of districts--e.g., industrialized suburbs--appear to be financially advantaged for they can get high levels of expenditure with little effort, while other types of districts--e.g., workingmen's "bedroom" suburbs--are disadvantaged because it takes high effort to achieve modest expenditures.

Garms examined expenditures per ADA in 107 large school districts in terms of 17 variables.[4] He found his model explained 73 percent of the variation in school expenditures. Significant variables in order of importance were percent of labor force unemployed (unexpectedly positive), median family income, percent homeowners (negative), median years of schooling, property valuation per pupil, and percent attending private schools.[5] Adding to the model a variable for region of the country in which the districts were located raised the amount of variation in expenditures explained from 73 percent to 85 percent.

Hirsch studied 27 school districts in the St. Louis City-County area.[6] There was relatively little state aid available to the districts. He found that 82 percent of the variation in total expenditures could be accounted for by his independent variables. Per pupil assessed valuation of property was by far the most significant variable, followed by an index of quality (teacher-pupil ratio, teacher educational level, etc.), and high school pupils in ADA as a percent of all pupils in ADA.

James, Thomas, and Dyck studied the school finance structures of districts in ten states.[7] They noted "a fairly general reduction in required levy rates as the level of state support rises."[8] This was especially true in states where it was legislative policy that state aid should substitute for property taxes. Moreover, voluntary levy rates tended to decline as the level of state aid rose.

They asked chief state school officers to identify districts in the ten states where substantial changes in economic and financial conditions had affected school revenues. These districts were subjected to the case-study method within the framework of different categories of state-local financial support. One category was composed of districts which had low state support and no mandated levies, and which had undergone a substantial increase in federal aid. In two districts expenditures rose, and in one of them the local tax rate was reduced.

In a second category, states with low state support but with mandated levies, a sudden influx of federal aid resulted in a district reducing its tax rate to one-sixth of its earlier level. In districts having an increase in their local tax base there were first increased expenditures, then lower tax rates. In rapidly growing communities, "subsequent behavior of the local tax rates is affected by the educational expectations of the newcomers."[9] Wisconsin was studied separately because it had an incentive plan to dampen the substitution effect (one level of government using revenues from another level of government to substitute for its own tax revenues). The substitution effect of federal funds was apparent on state funds--but not on local funds in the district studied.

The third category was comprised of states with high state support, where state-mandated local minimum tax rates were enforced and there were local levy limitations. Here the substitution of federal and state funds for local revenue was greater in California than New York. California districts had a lower state-mandated local tax rate than New York.

The authors examined the relationship between wealth and educational expenditures. They hypothesized expenditures depending on the community's wealth, level of aspiration, and institutional framework. They then sought to correlate a number of relevant variables to expenditures in fifteen sample districts.

They found property value had a significant positive correlation with expenditures in all samples. Median family income had a significant positive relation to expenditures in all samples except Nebraska. Percent of owner-occupied housing was negatively correlated with expenditures and was significant in all samples except Nebraska and Oregon. Median years of schooling was positively related to expenditures in two samples, negatively related in three, and not significantly related in ten.[10] Percent of labor force unemployed was significant and negatively correlated to expenditures in three of the fifteen samples. Percent of population nonwhite was significant in four of the fifteen samples--one positive and three negative relationships to expenditures existed. Percent of farm population was negatively significant in four samples. Percent of elementary school children in private schools was significantly related to expenditures in only two samples--one was positive and the other negative.

Thus, this study suggested that state-local financial support relationships had a significant impact on local tax rates, and that property wealth, income, and degree of home ownership had a very significant relationship with school expenditures.

Miner studied school systems in twenty-one states in a stratified, random, national sample.[11] He utilized United States census data and questionnaires returned by local school systems. He used multiple regression as his statistical technique and had four variables related to expenditures and twenty-one independent variables relating to school system characteristics.

He found the level of state per capita income was the most important determinant of total per capita expenditures. Median family income in local communities was inversely related to expenditures, but the proportion of families with incomes over $10,000 and the proportion of children in the population were positively related to expenditures. The proportion of children in private schools had a negative effect. Local costs were positively affected by the proportion of students in secondary grades, while location in an SMSA had a negative effect on local spending.[12] Local expenditures were strongly affected by state aid formulas.[13]

Metzcus[14] found that these human resources characteristics correlated with operating expenditures per pupil: median family income, district population size, percent of population non-white, proportion of population with college educations, and proportion of population in selected (professional and managerial) occupations. He also found these variables were not related to local tax effort. He found that state aid per pupil correlated .191 with local educational tax rate in 1950, and .411 in 1960. He also found that districts with low property wealth tended to make a high tax effort in support of schools.

Farner correlated 1960 census data with school district financial data in Oregon.[15] He found lower housing standards associated with higher expenditures per pupil in small districts. Percent of labor force male had a positive relationship to expenditures for districts of all population categories. Median family income had a negative relationship to expenditure levels in most account classes.

Harvey found that total assessed property valuation per pupil was the most significant predictor of total current expenditures per pupil.[16] Measures of components of assessed property valuation classified according to property use (residential, agricultural, and commercial) increased the coefficients of determination from 83 percent to 89 percent for 29 data cases and from 59 percent to 66 percent for 28 more homogeneous data cases.

Variables Related to Tax Effort

A number of studies have been performed to identify the socioeconomic determinants of tax effort. Johns and Kimbrough supervised a series of studies that sought to determine the factors associated with school district tax effort.[17] The first four studies[18] examined the effects of socioeconomic variables on tax effort. In four states, school districts with populations of 20,000 or more were chosen. Average effort was computed for 1949, 1950, 1959, 1960, and 1961, by dividing local revenue receipts by net effective buying income. Effort was also computed for the 1962-63 period by dividing local revenue receipts by equalized assessed valuation of property. The data were analyzed using stepwise multiple regression. In appraising the results of these studies Johns and Kimbrough said,[19] "But the independent variables were very unstable in their predictive power and would not continue as the best predictors from one period of time to another." They did find that over a period of time there was a considerable consistency in school district effort.[20]

Johns and Kimbrough studied types of community power structures, characteristics of community influentials, community beliefs, and the interaction of all these factors on school district financial effort. They found that non-competitive type power structures (that is, power structure not characterized by regime-like conflicts between community influentials) tended to make less tax effort, while high effort districts tended to have competitive power structures. Community influentials were more involved in educational issues in high effort districts than in low effort districts,[21] and the political beliefs of community influentials and teachers were more liberal in high effort districts than those in low effort districts.[22] The power structures of low effort districts tended to be dominated more by leaders of the economic community, while a higher percentage of political (rather than business) leaders tended to dominate the high effort districts. The amount of education possessed by community influentials was positively related to tax effort in two of the four states studied but negatively related in one state. Influentials in high effort districts tended to send their children to private schools. They also tended to be more recent arrivals in the community than influentials in low effort districts.[23]

Adams[24] examined 29 Kentucky school districts with populations in excess of 20,000. He sought to determine what socioeconomic variables influence school district tax effort. Average effort was computed for 1950, 1960, and 1962, using net effective buying income for the first two years and equalized assessed property valuation for the last. The districts were then ranked according to effort. "It was noted, by comparing the level of effort of each district with the group median effort, that fifteen districts of the selected twenty-nine remained consistently above, near, or below the norm."[25]

Adams then utilized step-wise multiple regression to correlate twenty-two socioeconomic variables to school district effort. He found that, in 1950, state revenue receipts per pupil in ADA, percent rural farm, and median family income were significant variables.[26] In 1960, percent 14-17 year-olds in public or private schools was significant.[27] He then took the 1960 data on socioeconomic variables and correlated them against tax effort, using 1962 property valuation as a measure of effort. He found percent of families with incomes of $10,000 or more and population per square mile were significant.[28] "No factor was significant in predicting variation in more than one dependent variable or in more than one year. This and other evidence cited throughout the study point out the fact that socioeconomic variables leave a large part of the local effort unexplained."[29]

Hopper[30] examined thirty-two school districts in Florida, using the same methodology as Adams. He found that twenty-six of the thirty-two school districts maintained the same position relative to the group median for local effort over at least fifteen of the eighteen years of the study. Moreover, twenty-one of the districts exhibited consistent trends in tax effort with seventeen increasing, three decreasing, and one constant.[31] So, tax effort was consistent, both in direction and in relation to other districts.

Using step-wise multiple regression, Hopper did find that, in 1950, there were significant correlations between tax effort and per capita net effective buying income, percent of families with income of $10,000 or more, percent rural farm, and percent in ADA public schools to total school population.[32] The only significant correlation he found in 1960 was percent 65 years old and over in the total population.[33] Using assessed property valuation as an effort measure for 1962, he found state revenue receipts per pupil in ADA and percent 65 years old or older were significant.[34]

Quick[35] found that twenty-eight Illinois school districts maintained relatively consistent patterns of tax effort over the period studied.[36] He also found that, in 1950, there were significant relationships between effort and per capita net effective buying income and between effort and ADA as a percent of total population.[37] In 1960, effort correlated with ADA as a percent of total population and state revenue receipts per pupil in ADA.[38] When he used equalized assessed valuation of property for his effort measure, he found state revenue receipts per pupil in ADA and percent of families with income of $10,000 or more to be significant.[39]

Miles studied educational expenditure and finance patterns in all the public high school districts in Iowa during 1968-69.[40] Iowa had enacted a state financial aid program during the 1967-68 school year. He compared the districts' finance and expenditure patterns before and after the aid program was implemented, and found that 31 percent of the high effort districts decreased their levels of local effort after enactment of the state aid while 74 percent of the low and middle effort districts increased their levels of effort.

Myers concluded, in part, that private and parochial school patrons and adults without children tended to oppose the tax increase for bond elections in Michigan.[41] Leaders of the group supporting the tax increases tended to have employment and educational patterns of greater status than leaders of groups opposing the increase.

Ranney found that educational expenditures outside the central city affected central city taxes and school expenditures.[42] Affluent suburbs could afford to spend more for education and central cities had to compete with them to get qualified personnel. He also found that "Income is a major determinant of school support both in the central cities and outlying areas."[43]

Witt and Pearce performed a study of voter reactions to a bond-tax election for a community college in San Mateo, California.[44] They found that people over 50 were less likely to vote in favor of the tax while those with children of college age were more likely to approve of it. They also found well over half of the professional and white collar workers approved the tax while there was far less approval among blue collar workers and retirees.

Hatley studied voting behavior in school bond elections.[45] He found no relationship between property tax elections and family income, but did find a relationship between family income and voting behavior on an income tax based surtax election. High income groups tended to support all school funding proposals, but low income groups tended not to support tax measures except those promising job-related benefits. He also found a relationship between voting behavior and number of children in family, educational attainment, and length of school district residence.

House found that three socioeconomic measures were related to effort in financing local welfare: percent of population urban, percent of population foreign born, and percent of in-migration.[46] Financial capacity measures had strong correlations with welfare effort and also with county per capita effective buying income, and per capita dollars raised by the property tax.

VARIABLES ASSOCIATED WITH EFFORT

From this analysis of related research, it was possible to identify several variables which surfaced most often as having some relationship to effort. By reviewing these studies and exercising some intuitive judgment, it was possible to list twenty-four variables which related to effort either positively or negatively. A strong positive relationship could conceivably contribute to high effort while a negative influence may deter or hinder high effort. These variables were:

X_1	Equalized assessed valuation of property per pupil
X_2	State revenue per pupil
X_3	Total average daily attendance
X_4	Percent increase or decrease in school enrollment
X_5	Percent students in non-public schools
X_6	Percent of revenue from federal sources
X_7	Percent of economically deprived children
X_8	Percent of population under 18
X_9	Percent of population 65 and over

X_{10}	Percent unemployment of the civilian labor force
X_{11}	Percent of employed people in white collar occupations
X_{12}	Percent families with incomes less than poverty level
X_{13}	Percent families with incomes of $15,000 or more
X_{14}	Median years of education
X_{15}	Percent of population 25 years old or over with one or more years of college
X_{16}	Percent of total population living in same house for five years as of 1965
X_{17}	Ratio of renter-occupied to owner-occupied housing
X_{18}	Percent of property tax paid by residences
X_{19}	Percent of property tax paid by farms and acreage
X_{20}	Percent of property tax paid by commercial and industrial firms
X_{21}	Percent of property tax paid by oil, mineral, and lumbering firms
X_{22}	Percent of Negro pupils in membership
X_{23}	Percent of ninth grade students completing high school
X_{24}	Adjusted gross income per pupil

As one can see there are several different types of characteristics of school districts scattered among these variables. We find variables identifying level of education, income, and wealth, type of residences, student clientele revenue, employment, occupations,[47] and others, all chosen because they apparently were associated with effort.

STATISTICAL PROCEDURE

Once the variables were identified and the data obtained, a series of statistical analyses were performed to identify the relationship between effort and the selected variables. Simply, the task was to identify a variable or several variables which would provide the best possible prediction of the criterion measure. Effort, for our purposes, was defined as local revenue per child in average daily attendance divided by the equalized assessed valuation of property per child in average daily attendance. The total equalized value of property included bank shares and domestic insurance shares. The effort of each school district is shown in Appendix A.

Procedurally, four statistical steps were involved: a simple correlation matrix, comparing all variables to effort and to each other; a multiple regression analysis to determine what combination of variables best predicted effort; a factor analysis to group variables having significant commonalities into factors; and a multiple regression analysis using the factors or groups of variables as predictors of effort.

It should be observed that the state of statistical analysis does not permit one to attribute causality. In other words, we cannot say, after completing this analysis, that one or mor variables cause high or low effort. The analysis will allow the assertion that one or more variables are significantly related to effort or it may indicate that one variable or a combination of variables will reliably predict high or low effort among districts.

Step-wise multiple regression was employed as the statistical tool to analyze two or more variables which may independently contribute to the prediction of effort. In this analysis the independent variable having the highest simple correlation with the dependent or criterion variable was entered into the equation first. In the second and subsequent steps, the independent variable having the highest partial correlation with tax effort was entered, each step thereby bringing a reduction in error in the variance based on the sum of squares deviation. This regression analysis was performed using data from all 192 school districts in Kentucky.

At the outset it was suspected that many of the variables identified would be interdependent to some degree and thereby tend to mask each other when identifying predictive variables. This suspicion necessitated the use of factor analysis to group the variables possessing correlational commonalities. Factor analysis effectively reduces the original set of variables to a smaller number, called factors, facilitating understanding of a complex pattern of interrelations. Factor analysis itself does not make distinctions between dependent and independent variables as is done with multiple regression. Factor analysis is merely concerned with the structure of interdependencies among variables.

STATISTICAL ANALYSIS

In the initial step of the analysis the correlation matrix was constructed, using Pearson Correlation Coefficients. Observing this matrix we found the 19 of the 24 independent variables significantly related to effort at the .005 level or higher. Among these were variables X_5 (percent student in non-public schools), X_{11} (percent in white collar jobs), X_{13} (incomes $15,000 or more), X_{14} (median years of education), X_{17} (ratio of renter- to owner-occupied housing), X_{18} (percent property tax from residences), X_{20} (percent property tax from businesses), X_{22} (percent Negro students), X_{23} (school retention rate), and X_{24} (adjusted gross income per pupil), all positively correlated with tax effort at the .001 level of significance. Variables X_4 (percent increase in school enrollment) and X_3 (total average daily attendance) were positively correlated with tax effort at the .005 level of significance.

When the 24 variables were entered into the multiple regression analysis, 23 had a combined multiple r of .752, explaining 56 percent of the variance in school district tax effort. Variable 18 (percent property tax paid by residences) dropped out of the regression equation because it was precisely inversely related to the dominant variable. The concomitant or strongest variable was X_{19} (percent of property tax paid by farms) which accounted for 30 percent of the variance in tax effort. This was a negative variable indicating that there is a tendency for the effort to decrease as the percent of property tax paid by farms increases (see Table 1). The next variable contributing most to the variance was X_{24} (adjusted gross income per pupil) which explained 9 percent of the variance in tax effort. The next six variables combined only increased the multiple r from .629 to .721, accounting for only about 12.5 percent of the variance.

We discovered in the correlation matrix that several of the independent variables had a very high correlation with each other, confirming that the variables tend to mask each other's relationships with the criterion variable. Such a phenomenon tends to disarm the multiple regression analysis which was the second step of the inquiry. If two variables, for example, have a fairly high correlation with the criterion variable and a low correlation with each other, then both measure different aspects of the criterion variable and both will probably contribute substantially to the prediction. If, however, two variables have a high correlation with each other, they are measures of much the same thing, and the inclusion of both in the regression analysis will contribute little to the prediction achieved.

At this point we subjected the data to factor analysis to identify better the primary independent variables and to predict better the dependent variable. The factor analysis condensed the twenty-four variables into six factors, indicating that commonalities existed among many of the variables which were measuring the same thing in the regression equation. Table 2 shows the factors. In analyzing this table one can see that the variables with the higher correlations with their individual factors represent a discernible pattern. In Factor 1, the variables with high correlations are those mainly related to fiscal ability. Factors with high loadings in this factor were equalized assessed valuation of property per child, percent unemployed, percent families with income less than poverty level, percent families with

TABLE 1. Relationship of Tax Effort to 24 Variables in 192 Kentucky School Districts (Multiple Regression Analysis)

Variable		Multiple R	R Square	Simple R
VAR019	Percent property tax paid by farms and acreage	0.55311	0.30593	-0.55311
VAR024	Adjusted gross income per pupil	0.62995	0.39683	0.48128
VAR022	Percent of Negro pupils in membership	0.65995	0.43553	0.31314
VAR007	Percent economically deprived children	0.67840	0.46022	-0.45143
VAR001	Assessed valuation of property per child	0.69424	0.48197	0.12936
VAR021	Percent property tax paid by mining and lumber	0.70287	0.49402	-0.05937
VAR003	ADA--Average Daily Attendance	0.70809	0.50139	0.18725
VAR006	Percent revenue from federal sources	0.72198	0.52126	-0.38349
VAR023	Percent retention of ninth grade through twelfth	0.72658	0.52789	0.24735
VAR017	Ratio of renter-occupancy to owner-occupancy housing	0.73078	0.53404	0.21539
VAR016	Percent of population in same house for five years	0.73621	0.54200	-0.15743
VAR004	Percent increase or decrease in enrollment-five year period	0.73975	0.54723	0.18517
VAR014	Median years of education	0.74285	0.55183	0.43143
VAR013	Percent family income greater $15,000	0.74683	0.55776	0.50208
VAR012	Percent families with income below poverty level	0.74852	0.56028	-0.46202
VAR002	State revenue per child	0.75008	0.56262	-0.42612
VAR020	Percent property tax paid by community and industry	0.75110	0.56416	0.38161
VAR015	Percent population greater than 25, one year college or more	0.75161	0.56493	0.36044
VAR009	Percent over 65	0.75211	0.56567	-0.06358
VAR011	Percent of employed people in white collar occupations	0.75245	0.56618	0.42341
VAR010	Percent unemployed	0.75261	0.56642	-0.25920
VAR008	Percent of population under 18	0.75269	0.56655	-0.04584
VAR005	Percent students in non-public schools	0.75272	0.56658	0.24111

TABLE 2. Rotated Factor Matrix Derived from 24 Independent Variables

Variable		Fiscal Ability	Urban or Nonrural	Age of Population
01	Assessed valuation of property per pupil	0.86946	-0.16205	-0.00767
03	Average daily attendance	0.06343	0.05872	-0.27888
08	Percent of population under 18	-0.28276	-0.03628	-0.50176
09	Percent of population 65 and over	0.08562	0.06046	0.86271
10	Percent unemployment of civilian labor force	-0.71297	0.02983	-0.13435
11	Percent of employed people in white collar	-0.02536	0.83643	-0.09267
12	Percent families with income below poverty level	-0.76445	-0.24524	0.03876
13	Percent family income greater $15,000	0.46285	0.56564	-0.20175
14	Median years of education	0.42964	0.49852	-0.23258
15	Percent population greater than 25 with one year college	0.15362	0.59887	-0.16162
16	Percent population living in same house five years	-0.12120	-0.04586	0.35730
17	Ratio of renter-occupancy to owner-occupancy house	-0.14818	0.32723	0.13858
18	Percent of property tax paid by residences	0.04552	0.91078	0.06512
19	Percent of property tax paid by farms and acreage	0.11906	-0.98898	-0.11938
20	Percent property tax paid by community and industry	-0.14640	0.69299	0.26579
21	Percent property tax paid by mining and lumber	-0.54855	0.11321	-0.20963
22	Percent of Negro pupils in membership	0.27999	0.07615	0.42828
05	Percent students in non-public schools	0.36047	0.21979	-0.36603
24	Adjusted gross income per pupil	0.41384	0.46406	-0.05860
06	Percent revenue from federal sources	-0.68485	-0.14692	-0.02187
07	Percent economically deprived children	-0.71674	-0.20234	0.19540
23	Percent ninth grade students completing high school	0.05302	0.15048	-0.08861
04	Percent increase or decrease in school enrollment	0.46901	-0.07161	-0.48966
02	State revenue per pupil	-0.69265	-0.28672	0.08934

TABLE 2. (Continued)

Variable		Stability of Community	Retention and Non-public Schools	Size of District
01	Assessed valuation of property per pupil	-0.16050	-0.15058	-0.00948
03	Average daily attendance	0.15760	0.06046	0.84915
08	Percent of population under 18	0.42182	-0.16342	0.19039
09	Percent of population 65 and over	0.19773	-0.03503	-0.19119
10	Percent unemployment of civilian labor force	-0.04793	-0.08408	-0.13883
11	Percent of employed people in white collar	-0.16903	-0.12720	-0.01288
12	Percent families with income below poverty level	-0.03260	-0.16281	-0.03007
13	Percent family income greater $15,000	0.09764	-0.02810	0.08670
14	Median years of education	-0.21214	0.09707	0.03820
15	Percent population greater than 25 with one year college	-0.31728	0.06129	0.02703
16	Percent population living in same house five years	0.79882	-0.19754	0.08884
17	Ratio of renter-occupancy to owner-occupancy house	-0.69351	-0.24088	0.06164
18	Percent of property tax paid by residences	0.06346	0.10200	-0.08212
19	Percent of property tax paid by farms and acreage	-0.00657	-0.05694	-0.02571
20	Percent property tax paid by community and industry	-0.17135	0.04217	0.26278
21	Percent property tax paid by mining and lumber	0.15075	-0.21856	-0.09322
22	Percent of Negro pupils in membership	-0.24248	-0.15973	0.42571
05	Percent students in non-public schools	-0.11442	-0.40153	0.01458
24	Adjusted gross income per pupil	0.31251	0.03155	-0.12180
06	Percent revenue from federal sources	-0.03071	0.00021	0.41891
07	Percent economically deprived children	-0.05285	-0.19779	0.04404
23	Percent ninth grade students completing high school	-0.06066	0.82804	0.03063
04	Percent increase or decrease in school enrollment	0.05759	-0.01811	-0.04121
02	State revenue per pupil	0.04331	0.19521	0.02580

incomes $15,000 or more, percent economically deprived children, and adjusted gross income per pupil. The other variables in this factor with high loadings were obviously related to wealth. For example, state revenue per pupil is inversely related to equalized assessed valuation because state aid formulas allocate resources in this manner. Percent of revenue from federal sources related highly with percent of economically deprived children since the amount of federal resources is directed toward low income children.

Factor 2 appears to be related to urbanization or nonrural variables. Percent of people employed in white collar occupations, percent of families with incomes $15,000 or more, median years of education, percent of population 25 years old or over with one or more years of college, percent property tax paid by residences, percent property tax paid by commercial and industrial firms, and adjusted gross income per pupil all had loading factors positively related. Percent of property tax paid by farms and acreage was negatively related to the other variables. Although income was not represented in this factor, it appeared that the dominant variables suggested these variables had non-rural characteristics.*

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*By entering just those variables with high loading which appear in these six factors into a multiple regression analysis, we find that the variables percent property tax paid by farms, adjusted gross income per pupil, and percent of the pupils who are Negro have the greatest predictive strength. The variables had the identical multiple $\underline{r}$ whether they were entered with the original twenty-four variables or among the ten variables selected from the groups identified by the factor analysis. The first three variables had a combined multiple of .65995 which was responsible for .43553 percent of the variance in school district effort.

In Factor 3, positive high loadings were found for percent of population 65 and over and percent of Negro pupils in membership. High negative loadings were found to be percent of population 18 and under and percent increase or decrease in school enrollment. This factor would appear, therefore, to identify age distribution of the community as the dominant variables but also includes race and population mobility.

Factor 4 appears to be related to community stability. Identified here are the variables percent of total population living in the same house for five years and the ratio of renter-occupied to owner-occupied housing. A tendency exists for renter-occupied housing to have greater turnover than owner-occupied.

Factor 5 is related to fewer dropouts and inversely related to the percentage of non-public school children.

High loadings in Factor 5 show positive relationships between total average daily attendance, percent of Negro pupils in membership, and percent of revenue from federal sources. These are all in-school variables which relate to the district size in Kentucky. The larger school districts have more Negro children and, because of the method of distribution of federal Title I ESEA funds, receive a higher percentage of federal funds.

A factor correlation matrix was computed (Table 3). Factors 1 and 2 had a positive correlation of .33509. Factors 2 and 4 had a negative correlation of .22546. All other intercorrelations were .15 or lower.

TABLE 3. Factor Correlation Matrix

	1	2	3	4	5	6
1	1.00000	0.33509	-0.12960	-0.15131	0.12573	-0.03574
2		1.00000	-0.07652	-0.22546	0.01661	0.07609
3			1.00000	-0.11499	0.06091	0.01702
4				1.00000	-0.00668	-0.13603
5					1.00000	-0.03981
6						1.00000

Factor scores were then computed for all 192 school districts, and a step-wise multiple regression among the factors and school district effort was performed. In effect, the factors condensed out of the twenty-four independent variables were treated as six independent variables and placed in the regression equation with tax effort as the dependent variable (Table 4).

The six factors had a combined multiple *r* of .64461, explaining .41552 of the variance in tax effort. It should be noted that factor 2 accounted for nearly 35 percent of the variance in tax effort and factor 1 accounted for 3 percent of the variance.

A PROFILE OF EFFORT

Our primary goal was to determine the nature of fiscal effort among school districts in Kentucky. We pursued the problem through a study of related research and the identification of variables which appeared to

TABLE 4. Relationship of Effort to Six Factors for 192 School Districts in Kentucky (Multiple Regression Analysis)

Variable			Multiple R	R Square	Simple R
VAR005	Factor 2	Urbanization and non-farm (standard of living)	0.58952	0.34754	0.58952
VAR004	Factor 1	Wealth and income	0.61715	0.38087	0.36946
VAR007	Factor 4	Stable homeowners	0.62879	0.39538	-0.03057
VAR009	Factor 6	High ADA, black	0.64116	0.41108	0.14109
VAR008	Factor 5	High retention public schools	0.64453	0.41542	0.09520
VAR006	Factor 3	Elderly declining population	0.64461	0.41552	-0.06842
(Constant					

contribute to high or low effort. Twenty-four variables were selected from the research and statistically analyzed in terms of their relationships to effort.

The analysis indicated that nineteen of the twenty-four variables, when correlated with effort, had a simple r which was significant at the .05 level at least. It was found, however, that many of these variables also had high intercorrelations which subsequently tended to confound, to some extent, the multiple regression analysis. Reducing the number of variables through factor analysis did not appear to help the correlation. Apparently, commonalities among even the ten variables had significant overlap and were therefore measuring much the same thing.

The multiple regression analysis, while somewhat disappointing, nevertheless produced a multiple r of .75272 with all twenty-four variables explaining .56 percent of the variance in effort. When only the ten selected variables were related to effort, the multiple r was .69239, explaining 47.9 percent of the variance. The Fisher value of all ten of these variables indicated significance much greater than the .01 level.

The factor analysis itself produced six groups with the dominant factors relating to (1) wealth in terms of income or equalized assessed valuation of property, and (2) non-rural or urban factors which included what might be termed standard of living factors, such as high income levels, commerce and industry, white collar jobs, and educational level, along with percent of tax paid by farms. When entered into a multiple regression formula, the factor of non-rural or urbanization had a multiple r of .58952, which explained 34.7 percent of the variance in effort. The wealth factor added about three points to the multiple r and explained an additional 3.3 percent of the variation in effort. All six factors combined had a multiple r of .64461, explaining 41.5 percent of the variance.

Although these multiple relationships and variance explanations are not as high as one might expect in the hard sciences, they nevertheless are quite significant when dealing with the socioeconomic nature of effort. These data do strongly suggest that the nature of effort in Kentucky is strongly influenced by variables associated with urbanization and wealth. One can generally expect high effort districts to be non-farm with higher than average income. One could easily impute causation created by wealth generally. It is evident that districts depending on property taxes levied from farms are doomed to low effort.

Acknowledging that the data presented in this paper are far from a complete picture of the nature of effort, it is nevertheless reasonably accurate for us to project a picture of the low effort school district as opposed to one of high effort. The low effort school district would typically have a high percent of its income derived from farm property, a high percent of low income families with deprived children, including Negro children, a high percent unemployed, and a high percent of persons 65 years or older. On the other hand, the high effort district will typically have high adjusted gross income, high median years of educational attainment among its citizenry, high percent of tax paid by commercial and industrial property, high percent of white collar workers, and a high incidence of renter-occupied housing, along with relatively high population mobility.

It is obvious, then, that effort is a function of wealth, good jobs, good education, youth, and mobility. Children who happen to attend schools in districts not having these attributes are probably destined to receive a lower level of education. Education and effort are inextricably intertwined, producing a cycle of education which is a function of community affluence and knowledge.

Based on these data, it would be quite rational to suggest that the state of Kentucky assume a more direct responsibility for protecting children from becoming victims of low effort school districts. This would mean a more direct influence by the state either to require greater effort of low effort districts or to provide greater equalized incentive for local districts to increase their efforts.

	School District	Effort		School District	Effort		School District	Effort
1.	Whitley	.00249	26.	McLean	.00343	51.	Trigg	.00396
2.	Grayson	.00257	27.	Christian	.00344	52.	Martin	.00396
3.	Science Hill	.00262	28.	Carlisle	.00345	53.	Logan	.00403
4.	Livingston	.00263	29.	Elliott	.00345	54.	Crittendon	.00407
5.	Graves	.00274	30.	Wolfe	.00345	55.	Lincoln	.00407
6.	East Bernstadt	.00277	31.	Rockcastle	.00349	56.	Rowan	.00409
7.	Pulaski	.00277	32.	Caldwell	.00352	57.	Powell	.00410
8.	Wayne	.00278	33.	Calloway	.00358	58.	Bourbon	.00417
9.	Laurel	.00283	34.	Clay	.00364	59.	Owsley	.00418
10.	Russell	.00284	35.	Menifee	.00369	60.	Floyd	.00419
11.	Todd	.00287	36.	Breckinridge	.00373	61.	Taylor	.00421
12.	Edmonson	.00287	37.	Butler	.00373	62.	Clinton	.00421
13.	Jackson	.00294	38.	Perry	.00374	63.	Knott	.00422
14.	Warren	.00297	39.	Fleming	.00375	64.	Bath	.00425
15.	Knox	.00297	40.	Estill	.00375	65.	Breathitt	.00429
16.	Casey	.00299	41.	Leslie	.00375	66.	Harrodsburg	.00435
17.	Hickman	.00302	42.	Muhlenberg	.00376	67.	Gallatin	.00437
18.	Lawrence	.00307	43.	Morgan	.00380	68.	Burgin	.00438
19.	Magoffm	.00311	44.	Irvine	.00381	69.	Harlan	.00438
20.	Williamsburg	.00315	45.	Hart	.00383	70.	McCreary	.00439
21.	Spencer	.00316	46.	Metcalfe	.00387	71.	Hardin	.00443
22.	Madison	.00323	47.	Fulton	.00388	72.	Shelby	.00454
23.	Lyon	.00328	48.	Cumberland	.00388	73.	Leitchfield	.00454
24.	Barren	.00340	49.	Adair	.00391	74.	Southgate	.00465
25.	Carter	.00341	50.	Ohio	.00395	75.	Barbourville	.00466

APPENDIX A

FISCAL EFFORT OF KENTUCKY SCHOOL DISTRICTS

Rank Order

	School District	Effort		School District	Effort		School District	Effort
76.	Monroe	.00467	101.	Campbellsville	.00514	126.	Harlan	.00566
77.	Greenville	.00470	102.	Woodford	.00516	127.	Oldham	.00567
78.	Lewis	.00470	103.	Pike	.00518	128.	Middlesboro	.00576
79.	Central City	.00478	104.	Allen	.00520	129.	Beechwood	.00584
80.	Simpson	.00479	105.	Marshall	.00520	130.	Pikeville	.00585
81.	Meade	.00480	106.	Greenup	.00523	131.	Augusta	.00586
82.	Boyd	.00485	107.	McCracken	.00524	132.	Catlettsburg	.00587
83.	Bracken	.00487	108.	Corbin	.00524	133.	Cloverport	.00593
84.	Mercer	.00489	109.	Providence	.00524	134.	Ballard	.00596
85.	Montgomery	.00489	110.	Boyle	.00528	135.	Trimble	.00596
86.	Scottsville	.00490	111.	Marion	.00528	136.	Daviess	.00598
87.	Jessamine	.00491	112.	Garrard	.00529	137.	Henry	.00599
88.	Washington	.00492	113.	Letcher	.00531	138.	Kenton	.00600
89.	Monticello	.00492	114.	Richmond	.00534	139.	Robertson	.00600
90.	Mason	.00495	115.	Nelson	.00537	140.	Nicholas	.00606
91.	Johnson	.00497	116.	Paintsville	.00538	141.	Webster	.00607
92.	Scott	.00499	117.	Henderson	.00539	142.	Bullitt	.00608
93.	Hazard	.00499	118.	Pendleton	.00539	143.	Mt. Sterling	.00608
94.	Bell	.00501	119.	Shelbyville	.00540	144.	Maysville	.00619
95.	Clark	.00502	120.	Owen	.00541	145.	Hopkinsville	.00626
96.	Anderson	.00504	121.	Union	.00542	146.	Russell	.00634
97.	Grant	.00504	122.	Jackson	.00544	147.	Franklin	.00635
98.	Pineville	.00509	123.	Ashland	.00558	148.	Boone	.00644
99.	Larue	.00509	124.	Harrison	.00559	149.	Somerset	.00653
100.	Green	.00510	125.	Hopkins	.00562	150.	Bardstown	.00654

	School District	Effort		School District	Effort
151.	Georgetown	.00657	176.	Fairview	.00816
152.	Murray	.00658	177.	Bowling Green	.00833
153.	Campbell	.00658	178.	Bellevue	.00836
154.	Williamstown	.00666	179.	Fulton	.00841
155.	Frankfort	.00667	180.	Walton-Verona	.00870
156.	Mayfield	.00676	181.	Jenkins	.00872
157.	Paris	.00677	182.	Owensboro	.00905
158.	Hancock	.00686	183.	Ft. Thomas	.00909
159.	Henderson	.00696	184.	Louisville	.00913
160.	Earlington	.00698	185.	Russellville	.00918
161.	Carroll	.00702	186.	Silver Grove	.00932
162.	Berea	.00706	187.	Covington	.00948
163.	Raceland	.00723	188.	Jefferson	.00953
164.	Eminence	.00732	189.	Newport	.00974
165.	Caverna	.00740	190.	Dawson Springs	.00991
166.	Elizabethtown	.00750	191.	Anchorage	.01166
167.	West Point	.00757	192.	Lynch	.01509
168.	Danville	.00758			
169.	Fayette	.00763			
170.	Ludlow	.00765			
171.	Lee	.00770			
172.	Erlanger	.00778			
173.	Glasgow	.00790			
174.	Dayton	.00795			
175.	Paducah	.00804			

FOOTNOTES

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[19] Johns and Kimbrough, p. 51.

[20] *Ibid.*, p. 69.

[21] *Ibid.*, p. 122.

[22] *Ibid.*, pp. 140-141.

[23] *Ibid.*

[24] Adams, *op. cit.*

[25] *Ibid.*, p. 42.

[26] *Ibid.*, p. 66.

[27] *Ibid.*, p. 69.

[28] *Ibid.*, p. 73.

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[30] *Hopper*, *op. cit.*

[31] *Ibid.*, p. 115.

[32] *Ibid.*, p. 80.

[33] *Ibid.*, p. 82.

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[35] Quick, *op. cit.*

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ECONOMIC ABILITY OF KENTUCKY COMPARED TO SELECTED STATES*

How wealthy or how poor is Kentucky and how does it compare with adjacent states? This is the question which legislators, policy-makers, and interested citizens raise when confronted with requests for additional funds to support governmental services. In the quest for additional funds to support state governmental services, interstate comparisons are inevitably made. The question mark of the relative ability of the state has traditionally been measured in terms of its per capita personal income or some related modification of these data. One state will be making an effort which represents a higher percentage of its per capita personal income than another state which has greater income but is exerting less effort in percentage terms.

Wealth can be expressed in many forms. Per capita personal income is only one method. Consideration should also be given to other indicators of economic activity. The state's relative position in farming, manufacturing, and mineral wealth should also be reviewed, as well as other items which reflect the general standard of living in a given state.

Data were analyzed for Kentucky and its adjacent states in terms of their fiscal capacity as measured by selective economic indicators, a limited number of standard of living items, expenditure levels for selected governmental services, and measures of revenue potential.

Caution should be exercised in developing generalizations and conclusions from state-by-state comparisons. By geographical, sociological, or political accident, one state may have more or less of a particular indicator than another or merit greater quantities because of conditions which require a larger than expected quantity of a service. However, state-by-state comparisons can be of value in assisting policy-makers in identifying the state's comparative position and the points of deviation from the expected position. These areas can then be analyzed to ascertain if there is a rational and/or defensible reason for the existing pattern.

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For the purposes of analysis, the assumption has been made that each state should have the same percentage of an economic indicator that it does of the nation's population. For example, if a state had ten percent of the nation's population, it should have that percentage of the nation's retail and wholesale trade, farm marketings, or mineral wealth. Granted the state may be higher on one indicator than on another, but the goal is to present a composite wealth indicator which is more broadly based than the traditionally used per capita personal income.

Table 1 reflects the population for Kentucky and each of its adjacent states as reported in the 1970 Census. The combined population of these states was in excess of 45,000,000 or over 22 percent of the nation's population. The population of Kentucky was over 3.2 million, ranking it seventh among the eight states. Kentucky had 1.58 percent of the nation's population; therefore, the assumption has been made that Kentucky should have 1.58 percent of each of the selected economic indicators in the following report. If a state has its expected per capita "share", the index would be 100; if a state has less than its share, the index would be less than 100, with the reverse being true if the index exceeded 100.

Indicators of Ability. Traditionally among the states, per capita personal income has been used as a wealth measure because this is the only indicator of wealth on which uniform data can be obtained from all states.

TABLE 1. Total Population of Kentucky and Seven Adjacent States: As of April 1, 1970 (Census)

State	Total Resident Population April 1970 (census)** (1,000)	Percent of Total U.S.
Illinois	11,114	5.47%
Ohio	10,652	5.24%
Indiana	5,194	2.56%
Missouri	4,677	2.30%
Virginia	4,648	2.29%
Tennessee	3,924	1.93%
*Kentucky	3,219	1.58%
West Virginia	1,744	.86%
Sample Total	45,172	22.23%***
National Total	203,235	

**Total resident population includes estimated armed forces personnel residing in each state.

***Percent of total U.S. population (45,172/203,235 = 22.23%)

Source: Population Estimates and Projections, Bureau of the Census, U.S. Department of Commerce, "Estimates of the Population of States: July 1, 1971 and 1972 (Advance Report)," Series P-25, No. 488, September 1972.

In 1970 personal income per capita for the nation was $3,920.00; for the seven state sample was $3,591.00; and for Kentucky was $3,084.00, a rank of six. On this measure of ability Kentucky had an index of 78.3 or about 22 less than the national average. The index for the seven sample states was 91.6. Illinois had the highest index (114.8) and West Virginia the lowest (77). See Table 2.

TABLE 2. 1970 Personal Income Per Capita for Kentucky and Seven Adjacent States

State	Total (1970)	Percent of National Average	Rank**
Illinois	4,501	114.82	1
Ohio	3,965	101.15	2
Indiana	3,779	96.40	3
Missouri	3,697	94.31	4
Virginia	3,616	92.24	5
Tennessee	3,084	78.67	6
*Kentucky	3,071	78.34	7
West Virginia	3,012	76.84	8
Sample Average	3,591	91.61	
National Average	3,920		

**Highest state = 1

Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1972 (93rd Edition), Washington, D.C., 1972, p. 319. From U.S. Bureau of Economic Analysis, Survey of Current Business, April, 1972.

To supplement the data on personal income per capita, manufacturing earnings per week were examined as another indicator of the economic ability of a state. On this measure Ohio ranked first with an index of 116, and Tennessee ranked last with an index of 81. The index for Kentucky was 96, somewhat higher than the index of 78 for personal income per capita. The ranking was sixth among the eight states.[1]

Retail trade sales comprise another measure of relative economic activity.[2] On this economic measure the Kentucky index was 81, with Illinois having the highest index of 113 and West Virginia having the lowest of 79. On this measure Kentucky ranked relatively close to its per capita personal income index of 78. A state's relative geographical position and its total economy will have an impact on its wholesale trade sales.[3] Among the sample states Illinois was the major economic center with an index of 157, or 57 percent above the expected level. West Virginia's wholesale trade sales index was 43, or 57 percent lower than the expected level. For Kentucky the index was 55, indicating that the state had 45 percent less than its approximate expected share of wholesale trade activity.

The agricultural base of a state will influence its total farm marketings and its government payments for agriculture, and these data do provide an additional indicator of the economic ability of a state. Missouri had the highest per capita value for its farm marketings with an index of 142 with West Virginia having the lowest index of 24.[4] The index for Kentucky was 112, or 12 percent above the expected level. On the measure of government payments for agriculture Missouri had the highest index of 169, or 69 percent more than would have been expected. The index for Kentucky was 71, with the state receiving lightly less than $36,000,000 in government payments to agriculture. The average index for the eight states for farm marketings was 86 and for government payments was 75.

In contrast with farm marketings, value added by manufacture presents another configuration of relative economic ability. The state with the highest index on this measure was Indiana with an index of 153; the state with the lowest index was Virginia with an index of 69.[5] The index for Kentucky was 92, or 8 percent less than the expected level. The index for the sample was 107. On this index Kentucky did not rank as high as on farm marketings, but did exceed the index on per capita personal income.

Geological conditions have resulted in certain states having greater mineral wealth than others. In analyzing mineral production among the eight sample states in 1970, West Virginia had an index of slightly over 500, or approximately 5 times the expected level.[6] On this measure Indiana had the lowest index of 33. The index for Kentucky was 179, or 79 percent more than expected.

External funds allocated to a state constitute a non-revenue income for the total economic activity of the state. Federal grants to state and local governments fall into this category. West Virginia had the highest index, 161, and Indiana had the lowest, 58.[7] The index for Kentucky was 118, indicating that it was receiving 18 percent more than its per capita share of federal grants to state and local governments. (The recent introduction of federal revenue sharing will alter this pattern, possibly reducing the disparity among the states.)

The total dollar amounts indicating state overall ability have been combined in Table 3 to provide a composite picture of total economic activity. Using the nation's totals an expected number was computed for each state based on that state's percentage of the nation's population. Per capita personal income was not included in this index because that economic activity is reflected in the components making up the total. Economic activities from other sources such as tourism and federal payrolls for individuals working in a particular state are among the categories which have been omitted. On the composite of economic activity Illinois ranked highest with an index of 130, and Virginia ranked lowest with an index of 69. Kentucky's index was 77, or the approximate equivalent of its index on per capita personal income. The index for the eight sample states was 105.

TABLE 3. Total Index of Economic Activity (8 State Sample)

State	Total of Eight Selected Economic Activity Factors** (millions)	Expected Number	Index***	Rank
Illinois	$ 87,056	$ 66,814	130	1
Ohio	68,319	64,005	107	3
Indiana	31,840	31,269	102	4
Missouri	33,081	28,094	118	2
Virginia	19,313	27,972	69	8
Tennessee	21,938	23,574	93	5
*Kentucky	14,823	19,299	77	6
West Virginia	7,932	10,505	76	7
Sample Total	$284,302	$271,531	105	
National Total	$1,221,463			

**Total retail sales; total wholesale trade sales; total farm marketing; total government payments to farms; total value of manufactured goods; total value of mineral production; total defense contract awards, and total federal aid to state and local governments.

***Computed by dividing the expected number into the actual number.

Source: U.S. Bureau of the Census, Pocket Data Book, USA 1971, U.S. Government Printing Office, Washington, D.C. 1971, p. 320.

U.S. Bureau of Census, Statistical Abstract of the United States: 1972 (93d edition), Washington, D.C., 1972 pps. 599; 715; 650; 254; 414.

Standard of Living Indicators. A selected number of standard of living indicators supplement the fiscal capacity indicators discussed in the above section. In considering the relative index for housing units among the eight sample states, Missouri's housing unit was 106, indicating that the state had 6 percent more housing units than would have been expected for its population.[8] Virginia had the lowest index, 95, indicating that the state had 5 percent fewer housing units than would have been expected. The index for Kentucky was 98, indicating slightly fewer houses than would have been expected on a per capita basis. Data concerning the percent of the housing units which were sound indicated that Illinois ranked highest with 90.7 percent classified as sound, and Kentucky ranked lowest with 75.0 percent being classified as sound.

An analysis of the number of telephones in the eight states in 1970 indicated that Illinois had the highest index of 108, or 8 percent more than would have been expected if telephones had been uniformly distributed throughout the nation on a per capita basis. West Virginia had the lowest index, 74. The index for Kentucky was 76. Data concerning the percent of households with telephones indicated that Kentucky ranked last with 80 percent of its households having telephones, and Illinois and Ohio ranked first with 94 percent ~~of their~~ households having telephones. For the eight sample states 88 percent of the households had telephones.[9]

The quantity of electric power produced in a state is an additional indicator of the relative standard of living potential within the state as well as an indicator of the potential for industrial and commercial development.

On this measure Kentucky ranked highest with an index of 174 and Missouri lowest with an index of 78.[10]

Automobile registration provides a different pattern among the surrounding states. Ohio ranked first with an index of 110, and West Virginia last with an index of 78.[11] On this measure Kentucky ranked 2.5 with an index of 99, indicating that the state had 1 percent fewer automobiles than would have been expected for its population.

Expenditures for Governmental Services. The previous discussion has revealed that the relative fiscal capacity of Kentucky shifted from below its expected level on most measures to above the level on other measures. In this analysis of effort being exerted in a given state, the per capita state-local tax burden provides the initial measure. As shown in Table 4 Illinois had the highest per capita tax burden with an index of 112, or 12 percent more than would have been expected. Tennessee had the lowest with an index of 66. The index for Kentucky was 69, indicating that the state's per capita state-local tax burden was 31 percent lower than would have been expected and also was lower than its index for personal income per capita and its total index for economic activity. These data are for fiscal year 1971.

Table 5 contains information relating to state and local government revenue for 1970. An analysis of revenue from federal sources indicated that West Virginia had the highest index, 141, and Kentucky had the second highest index, 107. Indiana had the lowest index, 61, or 39 percent less than would have been expected if funds had been allocated on a per capita

TABLE 4. Per Capita State-Local Tax Burden for Fiscal Year 1971 in Kentucky and Seven Adjacent States

State	Per Capita Tax Burden	Index**	Rank
Illinois	$513	112	1
Ohio	364	79	4
Indiana	402	87	2
Missouri	361	78	5
Virginia	372	81	3
Tennessee	302	66	8
*Kentucky	316	69	7
West Virginia	334	73	6
Sample Average	$371	81	
National Average	$460	100	

**Computed by dividing the per capita tax burden for the nation into the per capita for each state.

Source: Commerce Clearing House News Bureau, 4025 W. Peterson Avenue, Chicago, Illinois, November 15, 1972.

TABLE 5. Estimated Total Current Expenditures for Public Schools in Kentucky and Seven Adjacent States

State	Per Pupil in ADM	Index**	Rank
Illinois	960	111	1
Ohio	812	94	3
Indiana	792	91	4
Missouri	768	89	5
Virginia	823	95	2
Tennessee	623	72	7
*Kentucky	611	70	8
West Virginia	669	77	6
National Total	867		100

**Computed by dividing the average for the nation into the amount for each state.

Source: Estimate of School Statistics, National Education Association, Washington, D.C., 1971, p. 37.

basis. In the same table Illinois ranked first in terms of revenue from state and local sources, its index was 114. Tennessee ranked last with an index of 65. The index for Kentucky was 70, again indicating that the state's relative effort was less than its indicated capacity based on per capita personal income or economic activity.

Direct general expenditures for state and local governments provide an additional index of the relative effort being made by states. Data show that Illinois ranked highest with an index of 93.[6] Tennessee ranked last with an index of 77. The index for Kentucky was 82. When expenditures for highways were isolated, West Virginia ranked first with an index of 172, Kentucky ranked second with an index of 117. Kentucky's effort for highways far exceeded other governmental services including education. Indiana ranked eighth with an index of 77. In analyzing per capita expenditures for public elementary and secondary and higher education, Indiana ranked first with an index of 106, and Tennessee last with an index of 78. The index for Kentucky was 86, a ranking of 6.5 among the eight states.

The relative position for Kentucky in terms of current expenditures for public schools indicated that the state was making less effort than would have been expected in terms of its per capita personal income or index of economic activity. As shown in Table 5, Kentucky ranked last among the eight states with an index of 70. Illinois ranked first with an index of 111.

Revenue receipts from state and local sources provide an additional indicator of the relative effort being made by a state to support public elementary and secondary education. Data in Table 6 indicate that Illinois had the highest revenues from state sources per ADM; the amount was $467. Kentucky ranked second with the state dollars being $389. Illinois had the highest amount of dollars per ADM from local and other sources (excluding federal); the amount was $755. Kentucky ranked last with $218 per ADM from local and other sources.

TABLE 6. Estimated Revenue Receipts from State and Local Sources for Public Elementary and Secondary Education 1971-72

State	Actual State (1,000)	Dollars per ADM	Index	Local and Other (1,000)	Dollars per ADM	Index
Illinois	$ 1,059,765	$467	112	$1,714,469	$755	142
Ohio	660,000	275	66	1,370,000	570	107
Indiana	382,000	325	78	720,000	613	115
Missouri	317,000	327	78	504,781	520	98
Virginia	356,000	333	80	573,000	536	101
Tennessee	289,477	322	77	263,649	294	55
*Kentucky	276,359	389	93	155,000	218	41
West Virginia	148,745	376	90	112,285	284	53
National Total	$19,062,836	$417	100	$24,276,080	532	100

Source: Estimates of School Statistics, National Education Association, Washington, D.C., 1971, pp. 29 and 35.

ACIR Measures of State-Local Tax Capacity and Tax Effort. On a periodic basis the Advisory Commission on Intergovernmental Relations conducts a study of the relative tax capacity and effort among the 50 states. The approach is comprehensive and encompasses a variety of factors relating to taxes levied and other sources of revenue for state and local governments, as well as their relative ability when compared with other states in terms of resources which are available to be taxed.[*] In this study Kentucky was shown to have a relative tax capacity index of 81, and its tax revenue index was 72. This tax revenue index indicates that Kentucky was making less effort than its theoretical revenue capacity. Of the contiguous states, Missouri, Virginia, and West Virginia were making a relative tax effort which exceeded that of Kentucky.

Additional Revenue Potential. The National Educational Finance Project in a study by Professor John Due of the University of Illinois developed a "model" tax program for a state which included a balance of personal and corporate income and a sales tax with no exemptions.[**] The basic data were for 1971 and are reported in Table 7 for the eight sample states. West Virginia had the highest per capita income from state taxes, $198.17; Tennessee had the lowest, $88.62. Among the states Kentucky was making the fourth highest level of current per capita effort, $143.77, and still had an additional revenue potential of $223,000,000 in 1970. The state had exhausted its potential revenue from sales taxes but still had revenue potential from the personal income and corporate income taxes.

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[*] Detailed information relating to the ACIR study may be found in: *Measuring the Fiscal Capacity of States and Local Areas*, Advisory Commission on Intergovernmental Relations, Information Report, Washington, D.C. 1971.

[**] For a more comprehensive discussion, see: *Economic Factors Affecting the Financing of Education*. National Educational Finance Project, Gainesville, Florida, 1970, pp. 291-328; or *Financing Education: Fiscal and Legal Alternatives*. Charles E. Merrill Publishing Co., Columbus, Ohio, 1972, pp. 126-163.

TABLE 7. Present and Potential Revenue for Kentucky and Seven Adjacent States (Fiscal Year 1971)

	Sales Tax		Personal Income Tax		Corporate Income Tax	
State	1971 Revenue[1] (Millions $)	Potential Revenue @ 5% (Millions $)	1971 Revenue (Millions $)	Potential Revenue[2] @ Oregon Rate (Million $)	1971 Revenue[1] (Millions $)	Potential Revenue @ 7% (Million $)
Illinois	1,024	256	773.6	828.4	155.0	116.3
Ohio	675	169		1,344.0[3]		446.0
Indiana	404	606	218.5	411.5	159.6[4]	24.0
Missouri	325	217	140.5	411.5	27.3	30.1
Virginia	229	153	313.0	233.0	64.7	25.9
Tennessee	264	176	12.4	386.6	59.5	9.9
Kentucky	290		132.7	191.3	40.1	31.9
West Virginia	192	128	59.1	111.9	94.5[5]	.8
Sample Average	425	213	206	490	75	86
National Average	309	125	201	298	73	38

[1] State Tax Collections, In 1971, U.S. Dept. of Commerce, Dept. of Census, "State Tax Collections in Detail for States: 1971 & 1970"; Table 9, pp. 13-36, U.S. Printing Office: Washington, D.C.

[2] Statistical Data, 1972, "Personal Income, 1950 to 1971, and Rank, Order, 1971, By States," Table 519, p. 319.

[3] Estimated [4] Includes $150 million gross income tax. [5] Includes $89.6 million gross receipts tax.

TABLE 7. (Continued)

	Totals		Per Capita		
	1971 Revenue (Millions $)	Potential Revenue (Millions $)	1971 Revenue	Potential Revenue	Percent of Potential
Illinois	1,952.6	1,200.7	175.69	108.03	61.9
Ohio	675.0	1,959.0	63.37	183.91	25.6
Indiana	782.1	1,041.5	150.58	200.52	42.9
Missouri	492.8	658.6	105.37	140.82	42.8
Virginia	606.7	411.9	130.53	88.62	59.6
Tennessee	335.9	572.5	85.60	145.90	37.0
Kentucky	462.8	223.2	143.77	69.34	67.5
West Virginia	345.6	240.7	198.17	138.02	58.9
Sample Average	707	789	125.16	139.65	47.3
National Average	584	462	143.62	113.66	55.8

Findings. The analysis of various indicators of ability for Kentucky suggest that the state's relative ability is accurately reflected by the per capita personal income date. On the ten measures, indices above that computed for per capita personal income were attained for five categories of economic activity. An index below the per capita personal income index was attained in two instances, and an equal index was attained in the remaining instance. On the composite index which consisted of a grouping of economic indicators, Kentucky's index was 77 or approximately the same as its per capita personal income index. This would suggest that Kentucky's relative ability was relatively equal to its per capita personal income standing, with the state being slightly over 20 percent lower than the national average.

On the standard of living indicators, Kentucky's relative position was higher than would have been anticipated in terms of the number of housing units, but ranked lowest among the sample in percentage of housing units classified as sound. Kentucky also ranked last in percentage of households having telephones. Among the sample states Kentucky ranked highest in quantity of electric power produced, indicating additional potential for industrial and commercial development. Data relating to automobile registration indicated that Kentucky had the approximate percentage which would have been expected for its population.

Data relating to expenditures for governmental services indicated that Kentucky's relative effort was less than would have been expected, and in several instances was less than its per capita income index. An analysis of direct expenditures for state and local governments indicated that

Kentucky's index was slightly higher than its per capita personal income index, but still somewhat lower than the national average. Expenditures for highways exceeded the national average and the level of revenue receipts from state sources to support public elementary and secondary education was comparatively high among the sample states.

The overall low tax effort to support education in Kentucky is due to a general lack of effort at the local level and an under utilization of property tax as compared to other states. It appears that the local property taxes in Kentucky are inadequate and unresponsive to the needs of elementary and secondary education.

Conclusions. Data in the foregoing discussion suggest the following conclusions:

1. Per capita personal income provides a reasonably valid reflection of Kentucky's relative economic ability.
2. In terms of present levels of support for governmental services, Kentucky is not making effort commensurate with its ability.
3. The relative level of economic activity in the state provides Kentucky with an economic base which would permit higher expenditures for governmental services without an excessive taxation program.
4. The very low local tax effort to support education suggests that the legislature should either increase local property taxation for schools or it should rapidly move toward full state funding by exercising its taxation potential at the state level.

Recommendations

1. State and local revenues for public schools in Kentucky should be increased by approximately $120 million during the next biennium. This increase would bring Kentucky's effort for Public schools nearer the national average providing an enriched educational opportunity for Kentucky children.

2. Required local effort should be increased from its present level of approximately 30 cents per 100 dollars assessed valuation to 50 cents. The first year (1974-75) of the biennium the required local effort should be increased to 40 cents and moved to the full 50 cents for 1975-76. The required local effort would be subtracted from the total cost of the program as established by the Pupil-Cost Unit approach recommended earlier. Enactment of this recommendation would substantially increase equalization, narrow the wide range of effort now present among the school districts, and provide additional local revenue from the lagging property tax effort in Kentucky.

3. Additional revenues for the state school finance program should be raised from increases in the state personal income tax and the corporate income taxes. As indicated in this study, Kentucky has much more income tax potential which should be utilized primarily to raise the level of educational opportunity in the state.

4. The permissive local nonproperty taxes should be uniformly levied at the state level with the revenues being allocated to local school districts through the state foundation program. Such a change would create greater equity and uniformity of taxation for taxpayers and result in enhanced fiscal equalization among school districts.

FOOTNOTES

[1] U. S. Bureau of the Census, Statistical Abstract of the United States: 1972, Washington, D.C. 1972, p. 235. From U. S. Bureau of Labor Statistics, Employment and Earnings Monthly.

[2] U. S. Bureau of the Census, Pocket Data Book, U.S.A. 1971, U. S. Government Printing Office, Washington, D.C., 1971, p. 320. From U. S. Bureau of the Census, U. S. Census of Business: 1958, 1963, and 1967, Vol. II.

[3] Ibid.

[4] Ibid. p. 599.

[5] Ibid. p. 715.

[6] Ibid. p. 650.

[7] Ibid. p. 414.

[8] Ibid. p. 273

[9] Ibid. p. 494.

[10] Ibid. p. 508.

[11] Ibid. p. 546.

VARIATIONS IN EDUCATIONAL PROGRAM COSTS IN KENTUCKY SCHOOL DISTRICTS*

Educators and laymen alike have long recognized that not all educational programs are equally costly. From the time of the first school finance studies reported by Ellwood P. Cubberley at the turn of the century to the present day, some school districts have spent substantially more money than other districts to educate the same number of pupils. The development of specialized educational programs to meet more adequately the needs of particular types of pupils also has served to call attention to the fact that some pupils require relatively costly educational programs. Until the recent efforts of the National Educational Finance Project, however, very little has been known with regard to the magnitude and nature of the cost of providing educational programs tailored to meet the needs of specific types of pupils.

A major reason for the lack of data concerning the relative cost of various educational programs has been the lack of detail in most school accounting systems. Typically, school funds have been accounted for on a district-wide basis, rather than on a school-by-school basis. Furthermore, only a handful of districts maintain expenditure accounts which enable one to determine the cost of specific educational programs. It is clear, however, that unless more detailed cost and staffing information are available, it will be difficult to provide adequate funding for special educational programs designed to meet the needs of various types of pupils.

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*This substudy was researched and written by Richard A. Rossmiller, Professor, University of Wisconsin and Thomas H. Moran, Professor, University of Wisconsin.

The primary purpose of this project was to provide information concerning the relative cost of educational programs designed for specific target populations of pupils in the public schools of Kentucky. In addition, information concerning the distribution of pupils in various special educational programs, as well as in the regular educational program, was sought.

Design of the Study

To initiate this study, a meeting was held with members of the staff of the Kentucky Department of Education to discuss the data which would be needed to develop program cost indices and to determine the availability of such data. It was decided that the limitations imposed by time and resources would make it impossible to obtain the needed data for all school districts in the state. Consequently, the State Department of Education was asked to identify a representative sample of Kentucky school districts for the study. The following 28 school districts were selected:

1. Bardstown Independent
2. Boone County
3. Bullitt County
4. Carter County
5. Christian County
6. Clay County
7. Covington Independent
8. Daviess County
9. Fayette County
10. Fort Thomas Independent
11. Graves County
12. Harrison County
13. Hopkins County
14. Jefferson County
15. Johnson County
16. Laurel County
17. Louisville Independent
18. Mercer County
19. Middlesboro Independent
20. Mt. Sterling Independent
21. Newport Independent
22. Owensboro Independent
23. Paducah Independent
24. Perry County
25. Richmond Independent
26. Warren County
27. Williamstown Independent
28. Woodford County

Discussions with Mr. Melton and his staff led to the conclusion that the data files maintained for Kentucky school districts by the State Department of Education were adequate to provide the data needed to determine educational program costs and compute program cost indices. A computer program was written to extract the data and aggregate it by program. The ability of the State Department of Education to provide the needed information in usable form from its existing data files is noteworthy. Few, if any, other states maintain data files and computer capability adequate to perform this task. Among the major items of information obtained for each district were:

1. full time equivalent students enrolled in day school programs during the regular school year for each major category and sub-category of program,
2. the number of teachers and non-teaching academic supportive staff members for each district and each program category,
3. the total salaries of teachers and non-teaching academic supportive staff members by district and program, and
4. the distribution of current operating expenditures by district and by program category.

These data were analyzed separately for each school district and aggregated to obtain the cost for each full time equivalent pupil in the district's regular educational program, as well as in each special educational program offered by the district. All data were for the 1971-72 school year.

In Table 1 are summarized the various programs provided by each school district included in the sample. No judgments were made by the researchers with regard to the relative quality of the various educational programs. The only measure of program output used in this study was the number of students actually involved in each program. One cannot assume that program quality is equal in each district and a range in expenditure per pupil in each program is to be expected. Consequently, the districts were coded to minimize the temptation to make unjustified comparisons.

The data presented in Table 1 show that at the elementary school level the most prevalent handicapped programs were those for educable and trainable mentally retarded pupils, pupils in need of speech correction, home instruction programs, programs for crippled or neurologically impaired pupils, programs for deaf pupils, and programs for pupils with learning disabilities. Twenty-three districts provided compensatory programs in reading, 11 provided kindergarten compensatory programs, 12 provided special education compensatory programs, and 24 provided other types of compensatory programs.

At the secondary school level the following programs for handicapped pupils were most numerous: home instruction, programs for educable mentally retarded pupils and programs for pupils in need of speech correction. In compensatory programs at the secondary school level emphasis tended to be placed upon reading programs and special education programs. Each of the 28 districts provided one or more vocational-technical programs for secondary school pupils. Twenty-seven districts provided vocational-technical programs in trades and industries and home economics, 18 provided programs in business, 16 provided programs in agriculture, 13 provided programs in distributive education, and four provided programs in health occupations. In addition, 12 districts provided other types of special programs in vocational-technical education.

Regular Education Programs

Data concerning the cost of regular education programs are shown in Table 2. The cost for each full time equivalent elementary pupil in the regular educational programs in the 28 districts ranged from a low of $381 in District J to a high of $690 in District BB. The average expenditure per elementary pupil in the 28 districts was $504. Expenditure per full time equivalent secondary school pupil ranged from a low of $423 in District N to a high of $967 in District BB. The average expenditure per secondary school pupil was $560.

The ratio between expenditure per pupil in the regular secondary school program and expenditure per pupil in the regular elementary school program ranged from a low of .82 in District U (which reported spending $529 per elementary pupil compared with $435 per secondary pupil) to a high of 1.40 in Districts H and BB. The average ratio of secondary to elementary cost per pupil for all districts was 1.11. Thus, on the average, these 28 districts were spending $111 per secondary pupil for every $100 expended per elementary pupil.

Preschool Programs

Six school districts offered kindergarten programs (other than compensatory kindergarten programs). The cost per full time equivalent pupil in these programs ranged from $499.73 per pupil in District H to $628.31 per pupil in District W. In District Z the cost of the kindergarten program was only 90 percent of the cost of the regular program; in District O, the

TABLE 2

COST PER FULL TIME EQUIVALENT PUPIL FOR REGULAR EDUCATIONAL PROGRAMS IN 28 KENTUCKY SCHOOL DISTRICTS

District	Elementary	Secondary	Secondary/Elementary
A	$403	$473	1.17
B	534	561	1.05
C	410	476	1.16
D	536	562	1.05
E	538	533	.99
F	588	596	1.01
G	597	624	1.05
H	479	673	1.40
I	568	560	.99
J	381	522	1.37
K	447	456	1.02
L	409	447	1.09
M	601	585	.97
N	420	423	1.01
O	449	565	1.26
P	428	471	1.11
Q	406	478	1.18
R	528	602	1.14
S	510	549	1.08
T	461	551	1.20
U	529	435	.82
V	443	499	1.13
W	624	677	1.08
X	413	536	1.30
Y	541	572	1.06
Z	616	685	1.11
AA	572	605	1.06
BB	690	967	1.40
High	BB	BB	H, BB
Low	J	N	U
Mean	$504	$560	1.11

cost of the kindergarten program was 138 percent of the regular program cost. The average expenditure per kindergarten pupil in these six districts was $574.29 compared with an average regular program cost of $538.72. This produced a cost index of 1.05, indicating that expenditure per full time equivalent pupil in kindergarten programs exceeded that for regular programs by 5 percent. Data concerning the cost of kindergarten programs are shown in Table 3.

TABLE 3

COST PER FULL TIME EQUIVALENT PUPIL IN KINDERGARTEN PROGRAMS AND COST INDEX RELATIVE TO REGULAR PROGRAMS

District	1 Kindergarten Program Cost Per Pupil	2 Regular Program Cost Per Pupil	3 Cost Differential (1-2)	4 Cost Index (1/2)
D	$ 513.20	$ 535.50	($ 22.30)	.95
F	615.06	587.93	27.13	1.04
H	499.73	479.33	20.40	1.04
O	574.89	448.97	125.92	1.28
W	682.31	624.41	57.90	1.09
Z	560.56	616.22	(55.66)	.90
Mean	$ 574.29	$ 548.72	$ 25.56	1.05

Educational Programs for the Handicapped

Kentucky school districts offer a variety of programs for handicapped pupils. In this section data concerning the cost of educational programs for handicapped pupils will be reported separately for elementary and secondary school programs.

Programs for the Blind

None of the 28 school districts included in the sample offered a special educational program for blind pupils at either the elementary or secondary school level.

Programs for the Deaf

Five of the 28 school districts offered special educational programs for deaf pupils at the elementary school level. The cost of these programs ranged from $641.96 per pupil in District U to $1,103.17 per pupil in District B. The cost index in District AA was 1.48; the cost index in District B was 2.06. The average special program cost in the five districts was $918.46 and the average cost index was 1.65. That is, the average cost per pupil in these programs was 165 percent of the average cost per pupil in the regular program. Data concerning the cost of educational programs for deaf pupils will be found in Table 4.

Only District W offered an educational program for deaf students at the secondary school level. The cost per pupil in this program was $829.59, which was $152.49 greater than the regular program cost per pupil. This differential produced a cost index of 1.22, indicating the district was spending 22 percent more for pupils in the special program for the deaf than it was spending for each pupil in the regular secondary school program.

Programs for the Educable Mentally Retarded

In Table 5 are shown the costs associated with special programs for educable mentally retarded pupils. Expenditure per pupil ranged from a

TABLE 4

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE DEAF

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 1,103.17	$ 533.86	$ 569.31	2.06
M	930.43	600.82	329.61	1.54
U	641.96	428.75	213.21	1.49
W	1,064.86	624.41	440.45	1.70
AA	851.90	572.13	279.77	1.48
Mean	$ 918.46	$ 551.99	$ 366.47	1.65

low of $673.69 in District U to a high of $1,032 in District W. The cost index was greatest in District A--2.08--and lowest in District I--1.37. In the 23 districts which offered this type of program, the average cost per pupil was $849.06 and the average cost index was 1.68.

The costs of special educational programs for educable mentally retarded secondary school pupils in the 12 districts which offered such programs are shown in Table 6. Cost ranged from a low of $738.95 per pupil in District O to a high of $1,104.40 per pupil in District Z. The highest cost index was in District AA--1.66; the lowest was in District BB--1.16. The average cost per pupil in the 12 programs was $917.03 and the average cost index was 1.49.

TABLE 5

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE EDUCABLE MENTALLY RETARDED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 840.38	$ 403.33	$ 437.05	2.08
B	991.68	533.86	457.82	1.85
C	772.98	409.85	313.13	1.76
D	774.20	535.50	238.70	1.44
E	883.74	537.95	345.79	1.64
G	842.38	597.34	245.04	1.41
I	778.33	567.99	210.34	1.37
K	775.16	446.71	328.45	1.73
L	822.00	409.00	413.00	2.00
M	914.19	600.82	313.37	1.52
N	798.64	419.88	378.76	1.90
O	858.71	448.87	409.74	1.91
P	708.34	427.85	280.49	1.66
R	814.11	528.44	285.67	1.54
S	875.74	510.36	365.38	1.71
T	924.96	460.57	464.39	2.00
U	673.69	428.75	244.94	1.57
V	676.23	443.10	233.13	1.52
W	1,032.00	624.41	407.59	1.65
Y	860.09	540.98	319.11	1.58
Z	1,030.57	616.22	414.35	1.67
AA	961.20	572.13	389.07	1.68
BB	969.64	690.00	279.64	1.40
High	W	BB	T	A
Low	V	A	I	I
Mean	$ 849.06	$ 511.04	$ 338.02	1.68

TABLE 6

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE EDUCABLE MENTALLY RETARDED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
E	$ 838.32	$ 529.58	$ 308.74	1.58
G	869.71	624.50	245.21	1.39
M	968.74	584.59	384.15	1.65
O	738.95	564.77	174.18	1.30
R	813.07	601.50	211.57	1.35
S	786.48	548.98	237.50	1.43
T	837.64	550.57	287.07	1.52
W	1,090.51	677.10	413.41	1.61
Y	947.28	571.58	375.70	1.65
Z	1,104.40	685.14	419.26	1.61
AA	1,005.57	604.90	400.67	1.66
BB	1,003.65	859.39	144.26	1.16
High	Z	BB	Z	AA
Low	O	E	BB	BB
Mean	$ 917.03	$ 618.88	$ 298.15	1.49

Programs for the Emotionally Disturbed

In Table 7 are shown the cost per pupil in elementary school programs for the emotionally disturbed in the four districts which provided such programs. Program cost ranged from $761.30 in District S to $1,079.25 in District BB. The highest cost index was 1.88 in District AA; the lowest was 1.49 in District S and District W. The average cost per pupil in the four programs was $962.99 and the average cost index was 1.60.

TABLE 7

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE EMOTIONALLY DISTURBED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
S	$ 761.30	$ 510.36	$ 250.94	1.49
W	933.23	624.41	308.82	1.49
AA	1,078.19	572.13	506.06	1.88
BB	1,079.25	690.00	389.25	1.56
Mean	$ 962.99	$ 599.22	$ 363.77	1.60

Only District W provided a special program for emotionally disturbed secondary school pupils. The expenditure per pupil in this program was $916.27 compared with an average expenditure per pupil of $677.10 in the regular secondary school program. The resulting cost index was 1.35.

Programs for the Hard of Hearing

Three districts provided a special program for hard of hearing elementary school pupils. The cost of these programs ranged from a low of $871.18 in District AA to a high of $1,003.07 in District W. These data are summarized in Table 8. The highest cost index was 1.75 in District Y; the lowest was 1.52 in District AA. The average cost of the program for the three districts was $941.14 per pupil; the average cost index was 1.62.

Only District W provided a special program for hard of hearing secondary school pupils. The cost per pupil in this program was $852 and the cost index was 1.25.

TABLE 8

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE HARD OF HEARING

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
W	$ 1,003.07	$ 624.41	$ 378.66	1.60
Y	949.18	540.98	408.20	1.75
AA	871.18	572.13	299.05	1.52
Mean	$ 941.14	$ 579.17	$ 361.97	1.62

Programs for the Neurologically Impaired

In Table 9 will be found data concerning the cost of special educational programs for neurologically impaired elementary pupils. Six districts provided such programs with the lowest cost program in District T ($795.35) and the highest cost program in District W ($1,152.64). The cost indices ranged from a low of 1.35 to a high of 1.84. The average cost of the special program in the six districts was $955.51 and the average cost index was 1.61.

Two districts, M and AA, offered special programs for neurologically impaired secondary school pupils. The cost of the special program in District AA was $881.31, while that in District M was $925.38. The cost indices were 1.45 and 1.58, respectively, and the average cost index for the two districts was 1.51.

TABLE 9

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE NEUROLOGICALLY IMPAIRED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
M	$ 851.74	$ 600.82	$ 250.92	1.41
T	795.37	460.57	334.80	1.72
W	1,152.64	624.41	528.23	1.84
Z	837.58	616.22	221.36	1.35
AA	999.64	572.13	427.51	1.74
BB	1,096.08	690.00	406.08	1.58
Mean	$ 955.51	$ 594.02	$ 361.48	1.61

Programs for Crippled Pupils

Data concerning the cost of special programs for crippled elementary pupils are shown in Table 10. Six districts provided such programs with costs ranging from a low of $527.50 per pupil in District G to a high of $1,054.68 in District W. Cost indices ranged from a low of .88 to a high of 1.85. For the six districts, the average cost of these special programs was $886.50 and the average cost index was 1.54.

Speech Correction Programs

Nineteen districts provided speech correction programs for elementary pupils. Data concerning the cost of such programs are summarized in Table 11.

TABLE 10

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR THE CRIPPLED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 991.64	$ 533.86	$ 457.78	1.85
G	527.50	597.34	(69.84)	.88
M	946.32	600.82	345.50	1.57
R	904.59	528.44	376.15	1.71
W	1,054.68	624.41	430.27	1.68
AA	894.27	572.13	322.14	1.56
Mean	$ 886.50	$ 576.17	$ 310.33	1.54

District O provided the lowest cost program--$727.07 per pupil and District BB offered the highest cost program--$1,066.83 per pupil. Cost indices ranged from a low of 1.38 in District Z to a high of 1.98 in Districts C and K. For all districts, the average cost of the special program was $859.28 and the average cost index was 1.62.

Comparable data for speech correction programs for secondary school pupils in the ten districts which provided such programs are reported in Table 12. The cost of these programs ranged from the high of $3,360.86 to a low of $722.16. Cost indices ranged from a high of 5.87 to a low of 1.27. For the ten districts, the average program cost was $1,117.62 and the average cost index was 1.91.

TABLE 11

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPEECH CORRECTION PROGRAMS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 829.20	$ 533.86	$ 295.34	1.55
C	812.78	409.85	402.93	1.98
D	747.43	535.50	211.93	1.39
E	817.32	537.95	279.37	1.51
F	874.42	587.93	286.49	1.48
G	976.67	597.34	379.33	1.63
H	793.36	479.33	314.03	1.65
K	885.87	446.71	439.16	1.98
L	748.10	409.00	339.10	1.82
M	855.93	600.82	255.11	1.42
O	727.07	448.97	278.10	1.61
R	882.54	528.44	354.10	1.67
S	776.69	510.36	266.33	1.52
T	850.79	460.57	390.22	1.84
W	949.82	624.41	325.41	1.52
Y	948.36	540.98	407.38	1.75
Z	853.43	616.22	237.21	1.38
AA	929.71	572.13	357.58	1.62
BB	1,066.83	690.00	376.83	1.54
High	BB	BB	K	Z
Low	O	L	D	C, K
Mean	$ 859.28	$ 533.18	$ 326.10	1.62

Programs for the Trainable Mentally Retarded

The cost of special educational programs for trainable mentally retarded elementary school pupils in the 18 districts which provided such programs are shown in Table 13. The highest cost program was in District BB ($1,058.23);

TABLE 12

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN SPEECH CORRECTION PROGRAMS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 821.79	$ 560.73	$ 261.06	1.46
F	865.38	595.65	269.73	1.45
G	888.37	624.50	263.87	1.42
H	882.27	672.60	207.67	1.31
L	810.37	446.58	363.79	1.81
O	722.16	564.77	157.39	1.27
R	901.68	601.50	300.18	1.49
S	787.67	548.98	238.69	1.43
W	1,135.65	677.10	458.55	1.67
Y	3,360.86	571.58	2,789.28	5.87
High	Y	W	Y	Y
Low	O	L	O	O
Mean	$ 1,117.62	$ 586.40	$ 531.22	1.91

TABLE 13

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATION PROGRAMS FOR THE TRAINABLE MENTALLY RETARDED

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 800.12	$ 403.33	$ 396.79	1.98
B	972.00	533.86	438.14	1.82
C	746.08	509.85	336.23	1.82
F	972.36	587.93	384.43	1.65
G	928.72	597.34	331.38	1.55
J	773.53	381.38	392.15	2.02
K	818.02	446.71	371.31	1.83
L	712.86	409.00	303.86	1.74
M	868.30	600.86	267.48	1.44
O	824.76	448.97	375.79	1.83
R	825.36	528.44	296.92	1.56
S	807.53	510.36	297.17	1.58
T	942.55	460.57	481.98	2.04
U	741.53	428.75	312.78	1.72
W	1,038.03	624.41	413.62	1.66
Z	1,054.19	616.22	437.97	1.71
AA	937.17	572.13	365.04	1.63
BB	1,058.23	690.00	368.23	1.53
High	BB	BB	T	T
Low	L	J	M	M
Mean	$ 878.96	$ 513.89	$ 365.07	1.73

the lowest cost program was in District L ($712.86). Cost indices ranged from a low of 1.44 to a high of 2.04. For all 18 districts, the average program cost was $878.96 per pupil and the average cost index was 1.73.

Two districts, B and C, provided programs for trainable mentally retarded pupils at the secondary school level. The cost per pupil was $782.33 and

$756.55, respectively, and the comparable cost indices were 1.39 and 1.58. The average cost of programs in this category was $769.44 and the average cost index was 1.48.

Programs for the Partially Sighted

Only District W provided a special educational program for partially sighted pupils. The cost per elementary pupil was $1,123.49 and the elementary cost index was 1.79. For secondary school pupils, the program cost was $1,152.12 per pupil and the cost index was 1.70.

Home Instruction Programs

Fourteen Districts provided home instruction programs for elementary pupils who were unable to attend school on a regular basis. Data concerning the cost of such programs are shown in Table 14. The cost per pupil ranged from a high of $1,731.72 to a low of $930.18. Cost indices for these programs ranged from a high of 3.23 to a low of 2.06. The average cost per pupil for all 14 programs was $1,260.81 and the average cost index was 2.58.

Comparable data for the 13 districts which provided home instruction programs for secondary pupils are shown in Table 15. The cost per pupil ranged from a high of $1,554.06 to a low of $1,007.57. The range in cost indices was from 1.80 to 3.03. The average cost for the 13 programs was $1,225.36 per pupil and the average cost index was 2.27.

Home and Hospital Instruction

Five school districts provided a program of home and hospital instruction for elementary pupils confined by illness or accident. The cost per pupil for

TABLE 14

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL FOR HOME INSTRUCTION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
C	$ 930.18	$ 409.85	$ 520.33	2.26
E	1,108.79	537.95	570.84	2.06
H	1,251.89	479.33	777.56	2.61
J	1,156.39	381.38	775.01	3.03
K	1,021.06	446.71	574.35	2.28
L	1,321.33	409.00	912.33	3.23
M	1,307.60	600.82	706.78	2.17
O	1,273.04	448.97	824.07	2.83
Q	1,130.40	405.63	724.77	2.78
U	1,116.83	428.75	688.08	2.60
V	1,133.39	443.10	690.29	2.55
W	1,627.16	624.41	1,002.75	2.60
AA	1,541.56	572.13	969.43	2.69
BB	1,731.72	690.00	1,041.72	2.50
High Low	BB C	BB J	BB C	L E
Mean	$ 1,260.81	$ 491.29	$ 769.52	2.58

TABLE 15

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL FOR HOME INSTRUCTION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
C	$ 1,040.35	$ 475.88	$ 564.47	2.18
E	1,099.61	529.58	570.03	2.07
J	1,197.75	521.97	675.78	2.29
K	1,007.57	456.18	551.39	2.20
L	1,354.10	446.58	907.52	3.03
M	1,182.82	584.59	598.23	2.02
O	1,256.81	564.77	692.04	2.22
Q	1,158.01	478.27	679.74	2.42
U	1,131.94	435.29	696.65	2.60
V	1,128.03	499.13	628.90	2.25
W	1,516.95	677.10	839.85	2.24
AA	1,301.74	604.90	696.84	2.15
BB	1,554.06	859.39	694.67	1.80
High	BB	BB	L	L
Low	K	U	K	BB
MEAN	$ 1,225.36	$ 548.74	$ 676.62	2.27

these programs ranged from $1,123.86 to $1,447.68 and cost indices ranged from a low of 2.13 to a high of 2.71. The average cost for the five programs was $1,255.05 per pupil and the average cost index was 2.36. These data are shown in Table 16.

Five districts provided home and hospital instruction for secondary pupils with costs ranging from $762.40 per pupil in District R to $1,427.69 per pupil in District B. Cost indices ranged from 1.26 to 2.54. The average cost per pupil for the five programs was $1,200.17 and the average cost index was 2.07. These data are summarized in Table 17.

Hospital Instruction

Two districts, M and W, provided hospital instruction programs for elementary pupils. The cost of these programs was $1,150.38 and $1,715.34, respectively. The corresponding cost indices were 1.91 and 2.74. The average cost per pupil for the two programs was $1,432.86 and the average cost index was 2.32.

The same two districts provided hospital instruction programs for secondary pupils. The costs of the two programs were $1,187.83 and $1,792.17, respectively. Corresponding cost indices were 2.03 and 2.64. The average cost for the two programs was $1,490 per pupil and the average cost index was 2.34.

Programs for the Intellectually Gifted

District AA was the only one which provided a special program for intellectually gifted elementary school pupils. The cost per pupil in this program was $1,080.83 and the cost index was 1.88.

TABLE 16

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL FOR HOME AND HOSPITAL INSTRUCTION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 1,447.68	$ 533.86	$ 913.82	2.71
G	1,323.26	597.34	725.92	2.21
R	1,128.57	528.44	600.13	2.13
T	1,123.86	460.57	663.29	2.44
Y	1,251.87	540.98	710.89	2.31
Mean	$ 1,255.05	$ 532.24	$ 722.81	2.36

TABLE 17

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL FOR HOME AND HOSPITAL INSTRUCTION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 1,427.69	$ 560.73	$ 866.96	2.54
G	1,395.43	624.50	770.93	2.23
R	762.40	601.50	160.90	1.26
T	1,179.24	550.57	628.67	2.14
Y	1,236.09	571.58	664.51	2.16
Mean	$ 1,200.17	$ 581.78	618.39	2.07

District W was the only district which provided a special program for intellectually gifted secondary school pupils. The cost of the program was $994.06 per pupil and the cost index was 1.49.

Programs for Pupils with Learning Disabilities

In Table 18 data are provided concerning the cost of programs for elementary school pupils with learning disabilities. Five districts provided such programs at a cost ranging from a low of $847.11 per pupil to a high of $1,018.56 per pupil. Cost indices ranged from a low of 1.37 to a high of 1.63. The average program cost was $916.23 per pupil and the average cost index for the five programs was 1.52.

No district provided a special program for secondary school pupils with learning disabilities.

TABLE 18

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN SPECIAL EDUCATIONAL PROGRAMS FOR LEARNING DISABILITIES

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
G	$ 898.90	$ 597.34	$ 301.56	1.50
M	942.00	600.82	341.18	1.56
W	1,018.56	624.41	394.15	1.63
Z	847.11	616.22	230.89	1.37
AA	874.59	572.13	302.46	1.52
Mean	$ 916.23	$ 602.18	$ 314.05	1.52

Programs for the Multi-Handicapped

District T was the only district to report data on a special program for multi-handicapped elementary pupils. The cost of the program was $761.73 per pupil and the cost index was 1.65.

There were no secondary school programs for multi-handicapped pupils.

Summary

In Table 19 are presented data concerning the cost per full time equivalent pupil in all special educational programs for the handicapped. These data provide an estimate of the relative cost of educating all handicapped pupils in a school district relative to the cost of educating pupils in regular programs. The cost of elementary programs for handicapped pupils ranged from a low of $705.75 in District P to a high of $1,130.40 in District Q. The highest cost index was 2.78 in District O; the lowest cost index was 1.37 in District I.

Turning to secondary school programs for the handicapped, the highest cost program was in District Z, $1,393.93 per pupil, and the lowest cost program was in District O, $762.17 per pupil. The highest cost index was 2.60 in District U and the lowest cost index was 1.22 in District BB.

The average cost of all educational programs for handicapped elementary pupils was $872.55, while that for handicapped secondary pupils was $999.63. The corresponding cost indices were 1.76 and 1.80, respectively.

TABLE 19

COST PER FULL TIME EQUIVALENT PUPIL IN ALL SPECIAL EDUCATION PROGRAMS FOR THE HANDICAPPED

District	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
A	$ 824.27	$ --	$ 403.33	$ --	$ 420.94	$ --	2.04	--
B	990.31	911.18	533.86	560.73	456.45	350.45	1.85	1.62
C	752.09	893.13	409.85	475.88	342.24	417.25	1.83	1.87
D	770.80	--	535.50	--	235.30	--	1.43	--
E	953.85	885.62	537.95	529.58	415.90	356.04	1.77	1.67
F	944.06	865.85	587.93	595.65	356.13	270.20	1.60	1.45
G	918.45	964.85	597.34	624.50	321.11	340.35	1.53	1.54
H	828.59	882.27	479.33	672.60	349.26	209.67	1.72	1.31
I	778.33	--	567.99	--	210.34	--	1.37	--
J	843.10	1,197.75	381.38	521.97	461.72	675.78	2.21	2.29
K	797.65	1,107.57	446.71	456.18	350.94	651.39	1.78	2.42
L	816.19	1,108.25	409.00	446.58	407.19	661.67	1.99	2.48
M	900.59	1,008.39	600.82	584.59	299.77	423.80	1.49	1.72
N	798.64	--	419.88	--	378.76	--	1.90	--
O	872.56	762.17	448.97	564.77	423.59	197.40	1.94	1.34
P	705.75	--	427.85	--	277.90	--	1.64	--
Q	1,130.40	1,158.01	405.63	478.27	724.77	679.74	2.78	2.42
R	844.69	806.45	528.44	601.50	316.25	204.95	1.59	1.34
S	833.18	786.49	510.36	548.98	322.82	237.51	1.63	1.43
T	883.13	866.54	460.57	550.57	422.56	315.97	1.91	1.57

TABLE 19 (Continued)

District	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
U	$ 735.07	$ 1,131.94	$ 428.75	$ 435.29	$ 306.32	$ 696.65	1.71	2.60
V	735.18	1,128.03	443.10	499.13	292.08	628.90	1.65	2.25
W	1,036.75	1,104.60	624.41	677.10	412.34	427.50	1.66	1.63
Y	900.18	1,006.68	540.98	571.58	359.20	435.10	1.66	1.76
Z	961.89	1,393.93	616.22	685.14	345.67	708.79	1.56	2.03
AA	986.61	970.48	572.13	604.90	414.48	365.58	1.72	1.60
BB	1,016.61	1,051.61	690.00	859.39	326.61	192.22	1.47	1.22
High	Q	Z	BB	BB	Q	Z	Q	U
Low	P	O	J	U	I	BB	I	BB
Mean	$ 872.55	$ 999.63	$ 504.01	$ 570.22	$ 363.54	$ 429.41	1.76	1.80

Compensatory Education Programs

Twenty-seven of the 28 school districts in the sample provided one or more compensatory education programs for elementary pupils and 16 districts provided one or more compensatory programs for secondary pupils. The various compensatory programs will be discussed separately for elementary and secondary pupils in this section.

Compensatory Programs in Reading

In Table 20 data are presented concerning the cost of compensatory programs in reading for elementary pupils. District Z provided the highest cost program, $2,042.98, and District T provided the lowest cost program, $726.16. Cost indices ranged from a low of 1.32 in District I to a high of 3.31 in District Z. The average per pupil cost for reading programs in the 27 districts was $1,109.03 and the average cost index was 2.23.

Nine school districts provided compensatory programs in reading for secondary pupils. The cost of these programs ranged from a high of $3,382.96 in District AA to a low of $422.75 in District F. Cost indices ranged from a low of .70 to a high of 5.59. The average cost of the nine programs was $1,630.45 per pupil and the average cost index was 2.74. Data concerning the cost of compensatory reading programs for secondary pupils are presented in Table 21.

TABLE 20

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN COMPENSATORY PROGRAMS--READING

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 922.85	$ 403.33	$ 519.52	2.28
C	946.57	409.85	536.72	2.30
E	1,020.55	573.95	482.60	1.89
G	1,403.98	597.34	806.64	2.35
H	977.10	479.33	497.77	2.03
I	752.12	567.99	184.13	1.32
J	847.41	381.38	466.03	2.22
K	1,034.43	446.71	587.72	2.31
L	1,168.48	409.00	759.48	2.85
M	1,070.76	600.82	464.94	1.78
N	1,097.59	419.88	677.71	2.61
O	1,197.47	448.97	748.50	2.66
P	860.24	427.85	432.39	2.01
Q	1,049.78	405.63	644.15	2.58
S	880.85	510.36	370.49	1.72
T	726.16	460.57	265.59	1.57
U	890.30	428.75	461.55	2.07
V	864.48	443.10	421.38	1.95
W	1,750.58	624.41	1,126.17	2.80
Y	1,026.09	540.98	485.11	1.89
Z	2,042.98	616.22	1,426.76	3.31
AA	1,571.52	572.13	999.39	2.74
BB	1,405.32	690.00	715.32	2.03
High	Z	BB	Z	Z
Low	T	J	I	I
Mean	$ 1,109.03	$ 496.63	$ 612.39	2.23

TABLE 21

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN COMPENSATORY PROGRAMS--Reading

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
F	$ 422.75	$ 595.65	$ (177.90)	.70
K	1,480.72	456.18	1,024.54	3.24
M	1,506.18	584.59	921.59	2.57
O	1,496.85	564.77	932.08	2.05
S	815.34	548.98	266.36	1.48
U	928.55	435.29	493.26	2.13
W	2,882.67	677.10	2,205.57	4.25
AA	3,382.96	604.90	2,778.06	5.59
BB	1,758.00	859.39	898.61	2.04
Mean	$ 1,630.45	$ 591.87	$ 1,038.57	2.74

Compensatory Kindergarten Programs

Eleven districts provided compensatory kindergarten programs. The cost of these programs ranged from a low of $744.01 per pupil to a high of $1,950.73 per pupil. Cost indices ranged from 1.23 to 3.45. The average cost per pupil for compensatory kindergarten programs in the 11 districts was $1,272.10 per pupil and the average cost index of 1.05 in the six districts which provided regular kindergarten programs (see Table 3).

Data concerning the cost of compensatory kindergarten programs are shown in Table 22.

Compensatory Vocational-Technical Programs

District N and District W each provided a compensatory vocational-technical program for elementary pupils. The program cost in District N was $1,071.40 per pupil with a cost index of 2.55. In District W, the program cost was $1,495.73 per pupil and the cost index was 2.39.

District S and District W each provided a compensatory vocational-technical program for secondary school pupils. The program cost in District S was $797.89 per pupil with a cost index of 1.45. In District W, the program cost was $2,601.22 per pupil and the cost index was 3.84.

Compensatory Special Education Programs

Twelve districts provided compensatory special education programs for elementary pupils. The cost per pupil of these programs ranged from a low of $910.44 to a high of $2,545. The range in cost indices was from a low of 1.70 to a high of 4.13. The average cost per pupil in the 12 programs was $1,394.08 and the average cost index was 2.57. Data concerning the cost of compensatory special education programs for elementary pupils are shown in Table 23.

In Table 24 similar data for compensatory special education programs for secondary school pupils are displayed. Eight districts provided such programs with a cost per pupil ranging from $887.32 to $3,738.46. Cost indices for these programs ranged from 1.61 to 6.18. The average cost per pupil for the eight programs was $2,017.75 and the average cost index was 3.53.

TABLE 22

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN CONPENSATORY PROGRAMS--KINDERGARTEN

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 1,395.07	$ 403.33	$ 991.74	3.45
D	754.60	535.50	219.10	1.40
G	1,833.94	597.34	1,236.60	3.07
H	842.75	479.33	363.42	1.75
M	744.01	600.82	143.19	1.23
N	1,252.27	419.38	758.41	2.76
O	1,438.54	448.97	989.57	3.20
U	1,187.16	488.75	758.41	2.76
W	1,950.73	624.41	1,326.32	3.12
Y	748.79	540.98	207.81	1.38
BB	1,845.21	690.00	1,155.21	2.67
High	W	BB	W	A
Low	M	A	M	M
Mean	$ 1,272.10	$ 524.48	$ 747.61	2.46

TABLE 23

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN COMPENSATORY EDUCATION PROGRAMS--SPECIAL EDUCATION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 1,316.45	$ 533.86	$ 782.59	2.46
C	1,066.58	409.85	656.73	2.60
G	1,536.17	597.34	938.83	2.57
I	965.60	567.99	397.61	1.70
M	1,155.45	600.82	554.63	1.92
S	1,030.77	510.36	520.41	2.01
V	910.44	443.10	467.34	2.05
W	1,934.27	624.41	1,309.86	3.09
X	1,123.46	412.90	710.56	2.72
Y	1,324.37	540.98	783.39	2.44
Z	2,545.00	616.22	1,928.78	4.13
AA	1,820.38	572.13	1,248.25	3.18
High	Z	W	Z	Z
Low	V	C	I	I
Mean	$ 1,394.08	$ 535.83	$ 858.25	2.57

TABLE 24

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN COMPENSATORY EDUCATION PROGRAMS--SPECIAL EDUCATION

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
B	$ 1,389.11	$ 560.73	$ 828.38	2.47
C	1,299.42	475.88	823.54	2.73
G	3,572.18	624.50	2,947.68	5.72
M	1,523.60	584.59	939.01	2.60
P	1,180.61	470.95	709.66	2.50
S	887.32	548.98	338.34	1.61
Y	2,551.27	571.58	1,979.64	4.46
AA	3,738.46	604.90	3,133.56	6.18
Mean	$ 2,017.75	$ 555.26	$ 1,462.48	3.53

Other Compensatory Education Programs

Twenty-four districts provided other types of compensatory education programs for elementary pupils. Data concerning the cost of these programs are shown in Table 25. The cost per pupil in these programs ranged from a low of $526.80 to a high of $2,097.65. Cost indices ranged from 1.08 t o 4.78. The average cost per pupil in the 24 programs in this category was $1,080.71 and the average cost index was 2.22.

Nine districts provided other types of compensatory education programs for secondary school pupils. The cost for these programs ranged from $300.20

TABLE 25

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN COMPENSATORY PROGRAMS--MISCELLANEOUS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 1,417.65	$ 403.33	$ 1,014.32	3.51
B	1,498.69	533.86	964.83	2.80
C	823.62	409.85	413.77	2.00
D	848.13	535.50	312.63	1.58
E	1,900.92	537.95	1,362.97	3.53
G	967.35	597.34	370.01	1.61
H	748.55	479.33	269.22	1.56
I	634.07	567.99	66.08	1.11
J	1,824.31	381.38	1,442.93	4.78
K	1,047.76	446.71	601.05	2.34
M	1,049.92	600.82	449.10	1.74
N	1,445.12	419.88	1,025.24	3.44
O	1,415.67	448.97	966.70	3.15
P	526.80	427.85	98.95	1.23
Q	739.30	405.63	333.67	1.82
R	1,059.06	528.44	530.62	2.00
S	552.47	510.36	42.11	1.08
U	607.03	428.75	178.28	1.41
V	614.96	443.10	171.86	1.38
W	1,211.21	624.41	586.80	1.93
X	1,089.69	412.90	676.79	2.63
Y	749.57	540.98	208.59	1.38
AA	2,097.65	572.13	1,525.52	3.66
BB	1,067.45	690.00	377.45	1.54
High	AA	BB	AA	J
Low	P	J	S	S
Mean	$ 1,080.71	$ 497.79	$ 582.90	2.22

per pupil to $2,465.46 per pupil. The cost indices ranged from .50 to 3.64. The average cost of these programs in the nine districts was $1,133.36 and the average cost index was 1.91. Data concerning the cost of these programs are displayed in Table 26.

TABLE 26

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN COMPENSATORY PROGRAMS--MISCELLANEOUS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
C	$ 388.57	$ 475.88	$ (87.31)	.81
F	300.20	595.65	(295.45)	.50
I	587.09	559.93	27.16	1.04
K	1,320.38	456.18	864.20	2.89
M	1,428.65	584.59	844.06	2.44
U	738.93	435.29	303.64	1.69
V	895.96	499.13	396.83	1.79
W	2,465.46	677.10	1,788.36	3.64
BB	2,074.99	859.39	1,215.60	2.41
Mean	$ 1,133.36	$ 571.46	$ 561.90	1.91

Summary

In Table 27 the cost per full time equivalent elementary and secondary pupil in the aggregated compensatory education programs offered by each district is shown. The cost of all compensatory education programs for elementary pupils ranged from $561.08 in District P to $2,046.33 in District Z. Cost indices for the compensatory education programs for elementary pupils ranged from 1.31 in District P to 3.32 in District Z. The average cost per elementary pupil in all compensatory education programs was $1,076.40 and the average cost index was 2.18.

Compensatory education programs for secondary school pupils ranged in cost from $333.61 in District F to $3,573.98 in District AA. The corresponding range in cost differentials was from a low of .56 to a high of 5.90. The average cost of all compensatory education programs for secondary school pupils was $1,621.86 and the average cost index was 2.79.

Vocational-Technical Education Programs

Although most vocational-technical education programs were offered in secondary schools, a few programs also were found to exist in elementary schools. Data related to these programs are reported in this section.

Business Education Programs

No business education programs were offered for elementary school pupils.

Eighteen districts offered business education programs for secondary school pupils. Data concerning the cost of these programs are provided in Table 28. The cost of secondary school business education programs ranged

TABLE 27

COST PER FULL TIME EQUIVALENT PUPIL IN ALL COMPENSATORY EDUCATION PROGRAMS

	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
District	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
A	$1,071.76	$ --	$ 403.33	$ --	$ 668.43	$ --	2.65	--
B	1,381.64	2,170.23	533.86	560.73	847.78	1,609.50	2.58	3.87
C	896.46	431.08	409.25	475.88	486.61	(44.80)	2.18	.90
D	805.96	--	535.50	--	270.46	--	1.50	--
E	1,037.22	--	537.95	--	499.27	--	1.92	--
F	--	333.61	--	595.65	--	(262.04)	--	.56
G	1,379.27	3,572.18	597.34	624.50	781.93	2,947.68	2.30	5.72
H	850.08	--	479.33	--	370.75	--	1.77	--
I	761.54	587.09	567.99	559.93	193.55	27.16	1.34	1.04
J	1,089.17	--	381.38	--	707.79	--	2.85	--
K	1,038.21	1,405.94	446.71	456.18	591.50	946.76	2.32	3.08
L	1,168.48	--	409.00	--	745.48	--	2.85	--
M	979.94	1,479.49	600.82	584.59	379.12	894.90	1.63	2.53
N	1,327.05	--	419.88	--	907.17	--	3.16	--
O	1,281.01	1,614.75	448.97	564.77	852.04	1,049.98	2.85	2.85
P	561.08	1,180.61	427.85	470.95	133.23	709.66	1.31	2.50
Q	863.49	--	405.63	--	457.86	--	2.12	--
R	1,059.06	--	528.44	--	530.62	--	2.00	--
S	876.87	831.61	510.36	548.98	366.51	282.63	1.71	1.51
T	745.10	--	460.57	--	284.53	--	1.61	--

TABLE 27 (Continued)

	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
District	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
U	$ 816.16	$ 772.92	$ 428.75	$ 435.29	$ 387.41	$ 337.63	1.90	1.77
V	682.74	895.96	443.10	499.13	239.64	396.83	1.54	1.79
W	1,328.51	2,571.60	624.41	677.10	704.10	1,894.50	2.12	3.79
X	1,095.77	--	412.90	--	682.87	--	2.65	--
Y	918.79	2,551.27	540.98	571.58	377.81	1,979.69	1.69	4.46
Z	2,046.33	--	616.22	--	1,430.11	--	3.32	--
AA	1,753.26	3,573.98	572.13	604.90	1,181.13	2,969.08	3.06	5.90
BB	1,247.83	1,977.43	690.00	859.39	557.83	1,118.04	1.80	2.30
High	Z	AA	BB	BB	Z	AA	N	AA
Low	P	F	J	U	P	F	P	F
Mean	$1,076.40	$1,621.86	$ 497.51	$ 568.10	$ 578.87	$1,053.76	2.18	2.79

TABLE 28

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--BUSINESS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 713.22	$ 472.89	$ 240.33	1.50
C	711.88	475.88	236.00	1.49
E	855.77	529.58	326.19	1.61
F	796.78	595.65	201.13	1.33
G	798.11	624.50	173.61	1.27
K	653.37	456.18	197.19	1.43
L	664.32	446.58	217.74	1.48
M	741.29	584.59	156.70	1.26
O	782.41	564.77	217.64	1.38
P	707.12	470.95	236.17	1.50
S	732.51	548.98	183.53	1.33
T	749.08	550.57	198.51	1.36
U	637.84	435.29	202.55	1.46
V	744.93	604.90	140.03	1.23
W	899.59	677.10	222.49	1.32
Y	699.66	571.58	128.08	1.22
AA	744.93	604.90	140.03	1.23
BB	865.91	859.39	6.52	1.00
High	W	BB	E	E
Low	U	U	BB	BB
Mean	$ 758.32	$ 553.81	$ 204.51	1.39

from a low of $637.84 to a high of $899.59. Cost indices ranged from a low of 1.00 to a high of 1.61. The average cost per pupil in all programs was $758.32 and the average cost index was 1.39.

Distributive Education Programs

No distributive education programs were offered for elementary school pupils.

Thirteen districts offered distributive education programs for secondary school pupils. Table 29 provides data concerning the cost of these programs. Costs range from a high of $1,197.04 to a low of $543.59 per pupil. Cost indices for these programs ranged from a low of .99 to a high of 2.17. The average cost per pupil for all 13 programs was $854.70, yielding an average cost index of 1.50.

Programs in Trades and Industries

District Y was the only district to provide a program in trades and industries for elementary school pupils. The cost of the program was $617.90 and the cost index was 1.14.

Twenty-seven districts provided educational programs in trades and industries for secondary school pupils. Data concerning the cost of such programs will be found in Table 30. Program costs ranged from a low of $839.50 to a high of $1,067.83. Cost indices for these programs ranged from 1.22 to 2.02. The average cost per pupil in all 27 programs was $898.91 and the average cost index was 1.65.

TABLE 29

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--DISTRIBUTIVE

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
C	$ 851.65	$ 475.88	$ 375.77	1.78
G	816.71	624.50	192.21	1.30
K	686.09	456.18	229.91	1.50
M	794.55	584.59	209.96	1.35
O	752.57	564.77	187.80	1.33
P	838.80	470.95	367.85	1.78
Q	825.89	478.27	347.62	1.72
R	1,013.46	601.50	411.96	1.68
S	543.59	548.98	(5.39)	.99
T	1,197.04	550.57	646.47	2.17
W	897.96	677.10	220.86	1.32
AA	886.49	604.90	281.59	1.46
BB	1,006.27	859.39	146.88	1.17
High	T	BB	T	T
Low	S	K	S	S
Mean	$ 854.70	$ 576.74	$ 277.96	1.50

TABLE 30

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--TRADES AND INDUSTRIES

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 857.11	$ 472.89	$ 384.22	1.81
B	887.71	560.73	326.98	1.58
C	841.14	475.88	365.26	1.76
D	897.61	561.63	335.98	1.59
E	915.13	529.58	385.55	1.72
F	892.18	595.65	296.53	1.49
G	904.27	624.50	279.77	1.44
I	913.07	559.93	353.14	1.63
J	872.90	521.97	350.93	1.67
K	860.97	456.18	404.79	1.88
L	858.58	446.58	412.00	1.92
M	945.98	584.59	361.39	1.61
N	856.31	422.94	433.37	2.02
O	868.82	564.77	304.05	1.53
P	847.01	470.95	376.06	1.79
Q	858.63	478.27	380.36	1.79
R	899.92	601.50	298.42	1.49
S	861.98	548.98	313.00	1.57
T	890.07	550.57	339.50	1.61
U	839.50	435.29	404.21	1.92
V	853.24	499.13	354.11	1.70
W	1,007.49	677.10	330.39	1.48
X	875.71	535.53	340.18	1.63
Y	877.25	571.58	305.67	1.53
Z	969.68	685.14	284.54	1.41
AA	1,067.83	604.90	462.93	1.76
BB	1,050.43	859.39	191.04	1.22
High	AA	BB	N	N
Low	U	N	BB	BB
Mean	$ 898.91	$ 551.71	$ 347.20	1.65

Health Occupations Programs

No health occupations programs were provided for elementary pupils in the districts studied.

Four districts provided educational programs in health occupations and cost data for these programs are displayed in Table 31. The cost per pupil in these four programs ranged from $537.77 to $1,850.61. Cost indices ranged from 1.01 to 2.73. The average cost per pupil in all four programs was $1,076.09 and the average cost index was 1.60.

TABLE 31

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--HEALTH OCCUPATIONS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
E	$ 537.77	$ 529.58	$ 8.19	1.01
W	1,850.61	677.10	1,173.51	2.73
AA	919.82	604.90	314.92	1.52
BB	996.15	859.39	136.76	1.15
Mean	$ 1,076.09	$ 667.74	$ 408.35	1.60

Programs in Agriculture

No educational programs in agriculture were offered for elementary school pupils.

Sixteen districts provided educational programs in agriculture for secondary school pupils. Data concerning the cost of these programs will be found in Table 32. The cost per pupil in these programs ranged from a low of $680.09 to a high of $1,413.10. Cost indices for the programs ranged from a low of 1.60 to a high of 2.63. The average cost per pupil in the 16 programs was $1,102.64 and the average cost index was 2.13.

Programs in Home Economics

Three districts--W, Y, and AA--provided home economics programs for elementary school pupils with a cost per pupil of $1,584, $737.50 and $1,066.66, respectively. The corresponding cost indices were 2.92, 1.18, and 1.86. The average cost per pupil in the three programs was $1,129.39 and the average cost index for the three programs was 1.99.

Table 33 provides information concerning the cost of home economics programs for secondary school pupils. Twenty-seven districts provided such programs. The cost per pupil ranged from a low of $590.18 to a high of $1,159.71. Cost indices ranged from a low of .88 to a high of 1.88. The average cost per pupil in all 27 programs was $796.64 and the average cost index was 1.44.

Other Vocational-Technical Education Programs

Four districts provided special vocational-technical programs for elementary pupils. Data concerning these four programs are displayed in

TABLE 32

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--AGRICULTURE

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 919.45	$ 472.89	$ 446.56	1.94
C	1,210.27	475.88	734.39	2.54
E	1,284.49	529.58	754.91	2.42
J	1,210.45	521.97	688.48	2.31
K	1,195.34	456.18	739.16	2.62
L	936.35	446.58	489.77	2.09
M	1,095.99	584.59	511.40	1.87
N	680.09	422.94	257.15	1.60
O	986.09	564.77	421.32	1.74
R	1,205.67	601.50	604.17	2.00
T	999.18	558.57	448.61	1.81
U	865.97	435.89	430.68	1.98
V	1,302.73	499.13	803.60	2.61
X	1,413.10	535.53	877.57	2.63
Y	1,212.65	571.58	641.07	2.12
AA	1,124.49	604.90	519.59	1.85
High	X	AA	X	X
Low	N	N	N	N
Mean	$ 1,102.64	$ 517.12	$ 585.53	2.13

TABLE 33

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--HOME ECONOMICS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 693.16	$ 472.89	$ 220.27	1.46
C	736.80	475.88	260.92	1.54
D	774.69	561.63	213.06	1.37
E	934.10	529.58	404.52	1.76
F	934.99	595.65	339.34	1.56
G	747.83	524.50	123.33	1.19
H	997.48	672.60	324.88	1.48
I	845.90	559.93	285.97	1.51
J	826.34	521.97	304.37	1.58
K	635.64	456.18	179.46	1.39
L	605.23	446.58	158.65	1.35
M	786.95	584.59	202.36	1.34
N	642.95	422.94	220.01	1.52
O	652.71	564.77	87.94	1.15
P	824.31	470.95	353.36	1.75
Q	725.19	478.27	246.92	1.51
R	931.05	601.50	329.55	1.54
S	996.65	548.98	447.67	1.81
T	872.83	550.57	322.26	1.58
U	590.18	435.29	154.89	1.35
V	940.71	499.13	441.58	1.88
W	869.39	677.10	192.29	1.28
X	757.20	535.53	221.67	1.41
Y	651.74	571.58	80.16	1.14
Z	607.48	685.14	(77.66)	.88
AA	768.11	604.90	163.21	1.26
BB	1,159.71	859.39	300.32	1.34
High	BB	BB	S	V
Low	U	N	Z	Z
Mean	$ 796.64	$ 555.85	$ 240.79	1.44

Table 34. Cost per pupil ranged from $529.38 to $745.67 and cost indices ranged from 1.09 to 1.33. The average cost per pupil for the four programs was $624.38 and the average cost index was 1.21.

Special vocational-technical programs were provided for secondary pupils in 12 districts. Data concerning the cost of these programs will be found in Table 35. The cost per pupil ranged from a low of $448.74 to a high of $1,608.21. Cost indices ranged from a low of .94 to a high of 2.92. The average cost per pupil in all 12 programs was $915.49 and the average cost index was 1.64.

TABLE 34

COST PER FULL TIME EQUIVALENT ELEMENTARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--SPECIAL PROGRAMS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
M	$ 660.27	$ 600.82	$ 59.45	1.09
N	562.19	419.88	142.31	1.33
U	529.38	428.75	100.63	1.23
W	745.67	624.41	121.26	1.19
Mean	$ 624.38	$ 518.46	$ 105.91	1.21

TABLE 35

COST PER FULL TIME EQUIVALENT SECONDARY PUPIL IN VOCATIONAL-TECHNICAL PROGRAMS--SPECIAL PROGRAMS

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 448.74	$ 472.89	$ (24.15)	.94
B	678.74	560.73	118.01	1.21
C	571.54	475.88	95.66	1.20
E	980.24	529.58	450.66	1.85
K	846.16	456.18	389.98	1.85
L	964.30	446.58	517.72	2.15
M	1,042.73	584.59	458.14	1.78
R	886.69	601.50	285.19	1.47
S	1,608.21	548.98	1,059.23	2.92
W	780.58	677.10	103.48	1.15
AA	1,260.27	604.90	655.37	2.08
BB	917.63	859.39	58.24	1.06
High	S	BB	S	S
Low	A	L	A	A
Mean	$ 915.49	$ 568.19	$ 347.29	1.64

Summary

Table 36 provides data concerning the aggregated cost per pupil for all vocational-technical programs at the elementary and secondary school levels. Six districts provided vocational-technical programs for elementary school pupils. The cost per pupil in these programs ranged from $529.38 per pupil in District U to $1,145.03 per pupil in District Y. The cost indices for these six programs ranged from a low of 1.18 to a high of 2.11. The average cost per elementary pupil in the six districts was $785.06 and the average cost index was 1.47.

Each of the 28 districts provided one or more vocational-technical programs for secondary school pupils. The cost per pupil for all programs ranged from a low of $724.66 in District L to a high of $1,037.20 in District BB. Cost indices for these programs ranged from 1.20 in District BB to 1.98 in District V. The average cost of all programs in the 28 districts was $851.15 and the average cost index for all programs for the 28 districts was 1.55.

Distribution of Pupils in Regular and Special Programs

The distribution of pupils in special programs is a matter of great significance, for it will affect greatly the total amount of money required to provide adequate educational programs for pupils in the state. Table 37 provides a summary of the distribution of elementary and secondary pupils in the various educational programs provided in the 28 Kentucky school districts included in the sample for this study. Enrollments are expressed in

TABLE 36

COST PER FULL TIME EQUIVALENT PUPIL IN ALL VOCATIONAL-TECHNICAL PROGRAMS

	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
District	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
A	$ --	$ 749.28	$ --	$ 472.89	$ --	$ 276.39	--	1.58
B	--	772.72	--	560.73	--	216.99	--	1.38
C	--	794.50	--	475.88	--	318.62	--	1.66
D	--	836.15	--	561.63	--	274.52	--	1.48
E	--	930.63	--	529.58	--	401.05	--	1.75
F	--	849.09	--	595.65	--	253.44	--	1.42
G	--	818.11	--	624.50	--	193.61	--	1.31
H	--	997.48	--	672.60	--	324.88	--	1.48
I	--	872.78	--	559.93	--	312.85	--	1.55
J	--	1,007.13	--	521.97	--	485.16	--	1.92
K	--	755.31	--	456.18	--	299.13	--	1.65
L	--	724.66	--	446.58	--	278.08	--	1.62
M	712.28	825.22	600.82	584.59	111.46	240.63	1.18	1.41
N	562.19	760.14	419.88	422.94	142.31	337.20	1.33	1.79
O	--	786.15	--	564.77	--	221.38	--	1.39
P	--	808.77	--	470.95	--	337.82	--	1.71
Q	--	802.37	--	478.27	--	324.10	--	1.67
R	--	956.24	--	601.50	--	354.74	--	1.58
S	--	777.52	--	548.98	--	228.54	--	1.41
T	--	908.71	--	550.57	--	358.14	--	1.65

TABLE 36 (Continued)

District	Special Program Cost Per Pupil		Regular Program Cost Per Pupil		Cost Differential		Cost Index	
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
U	$ 529.38	$ 727.57	$ 428.75	$ 435.29	$ 292.28	$ 100.63	1.23	1.67
V	--	992.74	--	499.13	--	493.61	--	1.98
W	744.82	922.02	624.41	677.10	120.41	244.92	1.19	1.36
X	--	949.29	--	535.53	--	413.76	--	1.77
Y	1,145.03	815.74	540.98	571.58	604.05	244.16	2.11	1.42
Z	--	842.96	--	685.14	--	157.82	--	1.23
AA	1,016.66	806.84	572.13	604.90	444.53	201.94	1.77	1.33
BB	--	1,037.20	--	859.39	--	177.81	--	1.20
High	Y	BB	W	BB	Y	V	Y	V
Low	U	L	N	N	M	U	M	BB
Mean	$ 785.06	$ 851.15	$ 531.16	$ 556.03	$ 253.90	$ 295.12	1.47	1.55

terms of full time equivalent pupils and the percentage column indicates the percentage of elementary and secondary pupils in each program category.

Total full time equivalent enrollment in all elementary school programs was 206,064 pupils. Of this total 190,866 were enrolled in regular programs, 6,842 were enrolled in programs for the handicapped, 8,217 were enrolled in compensatory programs and 139 were enrolled in vocational-technical programs. The corresponding percentages were 92.62 percent in regular programs, 3.32 percent in programs for the handicapped, 3.99 percent in compensatory education programs and .07 percent in vocational-technical programs.

Within the handicapped program category, pupils in programs for the educable mentally retarded comprised by far the largest group, with 1.64 percent of all elementary pupils enrolled in such programs. An additional .37 percent of all elementary pupils were enrolled in programs for the trainable mentally retarded, .33 percent were enrolled in speech correction programs, and .24 percent were enrolled in programs for pupils with neurological impairments.

Enrollment in compensatory education programs included 1.35 percent of all elementary pupils in compensatory reading programs, .35 percent in kindergarten compensatory programs, .28 percent in compensatory special education programs and 2.0 percent in other compensatory programs.

Total enrollment in all secondary school programs for the 28 schools in the sample was 87,743 pupils of which 76,132 pupils (86.77 percent) were enrolled in regular secondary school programs, 1,191 pupils (1.36 percent) were enrolled in programs for the handicapped, 766 pupils (.87 percent) were enrolled in compensatory education programs and 9,654 pupils (11 percent) were enrolled in vocational-technical programs.

TABLE 37

PERCENTAGE DISTRIBUTION OF FULL TIME EQUIVALENT ELEMENTARY AND SECONDARY PUPILS BY EDUCATIONAL PROGRAM IN 28 KENTUCKY SCHOOL DISTRICTS

	Elementary		Secondary	
	Number	Percent	Number	Percent
Kindergarten	1,425.49			
Handicapped Programs	6,841.57	3.32	1,191.50	1.36
Blind				
Deaf	144.95	.07	14.53	.02
Mentally Retarded Educable	3,384.89	1.64	717.58	.82
Emotionally Disturbed	177.09	.09	11.80	.01
Hard of Hearing	81.02	.04	26.96	.03
Neurologically Impaired	490.33	.24	30.40	.03
Crippled (Special Class)	124.66	.06	3.93	.00
Speech Correction	675.41	.33	18.19	.02
Mentally Retarded Trainable	769.17	.37	22.23	.03
Partially Seeing	43.25	.02	7.29	.01
Home Instruction	150.43	.07	107.60	.12
Home and Hospital Instruction	34.29	.02	21.15	.02
Hospital Instruction	15.75	.01	7.87	.01
Intellectually Gifted	215.18	.10	3.37	.00
Learning Disabilities	257.06	.12		
Multi-Handicapped	11.89	.01		
Conference or Planning	266.20	.13	198.60	.23
Compensatory Programs	8,216.87	3.99	765.90	.87
Reading Program	2,790.85	1.35	162.85	.18
Kindergarten	711.17	.35		
Vocational Technical	24.26	.01	19.11	.02
Special Education	572.02	.28	77.06	.09
Health and Physical Education				
Other	4,118.57	2.00	506.88	.58
Vocational-Technical Programs	139.10	.07	9,653.91	11.00
Business			2,897.99	3.30
Distributive			834.41	.95
Trades and Industries	2.29	.00	2,591.93	2.95
Health Occupations			113.09	.13
Agriculture			500.09	.57
Home Economics	8.95	.01	2,056.41	2.34
Special Programs	127.86	.06	659.99	.75
Regular	190,866.55	92.62	76,131.70	86.77
TOTAL	206,064.09	100.00	87,743.01	100.00

Within the handicapped program category, .82 percent of all secondary school pupils were enrolled in programs for the educable mentally retarded, which was by far the largest special program category. Enrollment in compensatory education programs at the secondary level was concentrated in compensatory reading programs and in the "other compensatory programs" categories. In vocational-technical education, 3.3 percent of all secondary pupils were enrolled in business education programs, 2.95 percent were enrolled in trades and industries programs, and 2.34 percent were enrolled in home economics programs. The remaining vocational-technical programs each enrolled less than one percent of all secondary school pupils.

It should be noted that the data do not reveal whether or not all pupils who were qualified for (or who could benefit from) special programs were actually enrolled in such programs. Estimates of the prevalence of handicapping conditions reported by the National Educational Finance Project indicated the following percentage distribution: educable mentally retarded--1.30 percent, trainable mentally retarded--.24 percent, auditory handicapped--.10 percent, visually handicapped--.05 percent, speech handicapped--3.60 percent, crippled--.21 percent, neurological and special learning disorders--1.12 percent, emotionally disturbed--2.00 percent, and multiple handicapped--.07 percent, giving a total of 8.69 percent of all children with some type of handicapping condition. It is to be noted that not all children with handicaps require special educational programs. However, the fact that in these 28 districts only 3.32 percent of all elementary pupils and only 1.36 percent of all secondary pupils were in special programs for the handicapped strongly suggests that some eligible children are not currently being served.

The Application of Cost Indices

Considerable misunderstanding exists with regard to the application of cost indices in planning for the financing of educational programs. Cost indices are most appropriate when used for state-wide financial planning purposes. The availability of accurate cost indices for the state as a whole should permit more accurate estimates to be made of the amount of revenue needed to provide adequately for the special educational needs of all pupils. It must be emphasized, however, that an average is just that. Approximately one-half of the school districts in the state will be spending more than the state-wide average and the remaining one-half will be spending less. It is clear that using the average cost index for all educational programs state-wide as a basis for allocating funds to individual districts will not necessarily provide adequately for the specific educational needs of pupils in those districts.

A second important caveat lies in the fact that cost indices reflect current educational practice. The cost indices developed in this study, and in most studies, in no way reflect the efficacy or efficiency of the educational programs upon which the cost indices are based. Thus, cost indices typically reflect what is currently being done rather than what could be or what should be done in the way of educational programming.

A third observation is closely related to the second. Cost indices show the relative cost of educating pupils in special programs compared with the cost of educating pupils in regular programs. They provide no information as to how wisely and how efficiently funds are being expended for either regular programs or special educational programs. This points to the need for a well developed, carefully monitored evaluation of all educational programs based upon the desired outcomes if cost indices are to be interpreted properly.

Finally, it should be noted that costs will differ between districts for identical programs for a variety of reasons. A very important factor in determining the relative cost of educational programs is the pupil/teacher ratio. Some districts will have too few pupils to operate a program at maximum efficiency, but pupils who happen to live in such districts certainly should not be denied access to the educational programs they need simply because there are not enough of them to operate a class at maximum efficiency.

While educational cost indices may be used as a valuable planning and allocation tool, we wish to emphasize that constant evaluation of the educational programs of the state must be maintained in order to secure maximum effectiveness and efficiency in the expenditure of public funds.

TEACHER SALARIES AND STAFFING PATTERNS*

This report summarizes an investigation into teacher salaries, teacher characteristics, and staffing patterns of public education in the state of Kentucky. The study relies heavily on the collection and analysis of data obtained from a number of sources including published data of the National Education Association and the Kentucky State Department of Education. Additional data were obtained from the files and data bank of the Kentucky State Department of Education and from questionnaires developed and distributed by the research staff.

Teachers comprise the greatest input resource in the educational enterprise in Kentucky and in the nation. Financial reports of Kentucky school districts for 1971-72 show that 81.9 percent of local school district current expenses (pupil transportation not included) were expended for instruction. For this reason, in any study of the financial structure of a state education program, attention must be given to the characteristics and compensation of the teaching staff of the state.

An analysis of the teaching staff in Kentucky revealed that differences in teacher characteristics and teacher salaries did exist among various geographic regions of the state. These differences were associated with school district size and the relative wealth of local school districts.

The most recent estimates indicated that 2,349,049 full-time instructional personnel were employed in the nation in 1970-71, an increase of approximately

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*A study performed by Thomas S. Jeffries, Associate Professor of Education, School of Education, University of Louisville.

3.0 percent over the previous year. During the 1970-71 school year, 34,711 professional educators were employed in the state. Thus, 1,5 percent of all instructional personnel in the United States were employed by Kentucky school districts. This was an increase of 3.9 percent over the previous year.

The state has been divided into 17 Kentucky Educational Development Districts (EDD's) by the State Department of Education. This study will use the EDD's as geographic regions for purposes of comparing teacher characteristics and teacher salaries within the state. The regions are shown in Table 1.

TABLE 1

Region	Number of School Districts	Area
1	12	Paducah-Murray Area
2	14	Hopkinsville Area
3	10	Owensboro Area
4	15	Bowling Green Area
5	13	Elizabethtown-Bardstown Area
6	8	Bullitt-Shelby County Area
7	22	Northern Kentucky Area
8	3	Jefferson County
9	11	Morehead Area
10	10	Ashland Area
11	7	Prestonburg-Pikeville Area
12	11	Breathitt County Area
13	16	Corbin-Barbourville-Harlan Area
14	14	Columbia-Somerset Area
15	16	Danville, Frankfort, Georgetown Area
16	9	Richmond Area
17	1	Fayette County

The wealth index used in the study was computed by the State Department of Education; local revenue per child in average daily attendance was divided by the assessed value per child in ADA. Using the 1970-71 wealth index, the state was divided into six wealth categories as shown in Table 2.

TABLE 2

Wealth Category	Wealth Index Range	Number of School Districts in Category
1	0.1450--0.3970	32
2	0.4020--0.4960	37
3	0.5010--0.5960	35
4	0.6000--0.6990	40
5	0.7040--0.8930	32
6	0.9010--1.5880	16

In 1971-72, Kentucky school districts ranged in size from a school district with an instructional staff of nine and an average daily attendance (ADA) of 153.8 (Southgate) to a school district with an instructional staff of 4,423 and an average daily attendance of 88,574 (Jefferson County). For this study, school districts were divided into nine categories based on size as reflected in Table 3.

TABLE 3

Size Category	ADA Range	Number of Districts in Category
1	153.8-- 567.9	19
2	606.5-- 995.8	18
3	1,005.7-- 1,496.8	26
4	1,505.2-- 1,998.9	26
5	2,009.3-- 2,491.6	28
6	2,504.8-- 2,980.6	19
7	3,054.9-- 3,920.7	18
8	4,065.3-- 5,739.6	21
9	6,123.7--88,574.0	17

KENTUCKY'S PROFESSIONAL EDUCATION STAFF

This section of the report describes the professional education staff of Kentucky's public schools, particularly in relation to the 1971-72 school year. The teacher characteristics of age, experience, and training have been analyzed in terms of their relationship to the size, wealth, and location of school districts. Selected school district variables will be used in analyzing Kentucky professional education staffing patterns.

The Age of Kentucky Teachers

The estimated mean age of all 1971-72 Kentucky teachers was 38.0 years. In terms of total numbers, by far the largest single group of certificated personnel was in the 26-35 category--8,112 or 23.3 percent of the total teaching force. The age distribution is shown in Table 4. The table does not include 7,105 persons for whom age was unknown.

TABLE 4

Age	Number	Percent
21-25	5,664	21.1
26-35	8,112	30.3
36-45	5,082	19.0
46-55	4,098	15.3
56-65	3,494	13.0
66+	364	1.3

Source: Compiled from data provided by the Kentucky State Department of Education

As indicated in Table 5, a breakdown of figures for the state shows that when average age was considered, the oldest teachers were in Kentucky Educational Development Districts (EDD's) 9, 10, 11, 12, 13, and 14, which are located in extreme Eastern and Southeastern Kentucky. The average age in these six EDD's was 40.6 years of age as contrasted to the average in the state of 38.0 years. When average figures were considered, the youngest teachers were in EDD's 3, 6, 7, 8, and 17, located adjacent to the Ohio River from Union County north and including the Northern Kentucky area and in Fayette County. The average age in these six EDD's was 36.05 years. The area of the state with the oldest teachers was the area with a declining school population while the area with the average age lower than the state average was an area of increasing school population.

TABLE 5. Average Age of Kentucky Public School Personnel Regional Distribution

Geographic Region (EDD's)	Average Age
1	37.94
2	39.33
3	36.41
4	38.52
5	36.86
6	35.14
7	35.44
8	36.63
9	39.37
10	40.99
11	40.59
12	39.71
13	41.28
14	41.88
15	36.81
16	38.43
17	35.84

Source: Compiled from data provided by the Kentucky State Department of Education.

When the school districts were grouped on the basis of wealth, as shown in Table 6, the average age of teachers was highest in the districts with the lowest wealth index (Groups 1 and 2) and the average age was lower in districts with the highest wealth index (Group 6).

TABLE 6. Average Age of Kentucky Public School Personnel School District Wealth Distribution. (Groups 1-6, Low to High Wealth Index)

Group	Average Age
1	39.74
2	39.94
3	38.19
4	37.68
5	37.76
6	36.37

Source: Compiled from data provided by the Kentucky State Department of Education.

An analysis of average age of teachers when school districts were grouped by size in Table 7 indicates that the group of school districts with the smallest average daily attendance (Group 1) had the highest average age of teachers while the group of school districts with the largest average daily attendance (Group 9) had the youngest average teaching age.

The districts experiencing growth, the larger districts, and the wealthier districts had a professional staff with younger average ages. Conversely, the highest average age groups were found to be districts of declining population, the smaller districts, and the poorer school districts of the state.

When data dealing with average age of the teaching staff were treated statistically using a one-way analysis of variance, no statistically

TABLE 7. Average Age of Kentucky Public School Personnel--School District Size Distribution. (Groups 1-9 Small to Large).

Group	Average Age
1	39.65
2	38.22
3	39.36
4	39.23
5	39.63
6	38.61
7	38.77
8	38.30
9	36.85

Source: Compiled from data provided by the Kentucky State Department of Education.

significant difference in the average age of teachers was found when school districts were grouped by size. When the school districts were grouped by region, there was a statistically significant difference at the .05 level between groups in all age categories except the category of age 66+. The grouping of districts by wealth index revealed a significant difference at the .05 level in two age categories: 21-25 and 56-65.

Years of Experience

Teachers were placed in four groupings based on number of years of teaching experience: 0 years, 1-3 years, 4-9 years, and 10+ years. According to Table 8, when teacher experience was analyzed based on regional distribution (EDD's), the eastern and southeastern sections of the state (Regions 9, 10, 11, 12, 13, and 14), had a much higher percentage of teachers with 10 years or more of experience and a corresponding smaller

TABLE 8. Experience of Kentucky Public School Personnel--Regional Distribution. (Expressed in Percentages).

Region	0 Years	1-3 Years	4-9 Years	10+ Years
1	12.9	22.2	26.4	38.5
2	12.1	20.1	22.3	45.6
3	13.0	24.0	27.2	35.8
4	12.1	20.0	22.2	45.7
5	13.7	22.3	22.6	41.4
6	12.8	28.8	23.2	35.2
7	13.9	26.2	23.0	36.9
8	12.9	25.5	27.4	34.2
9	12.5	18.7	19.7	49.1
10	9.9	18.2	19.4	52.5
11	9.9	13.0	18.9	58.2
12	9.9	15.9	18.7	55.5
13	9.4	13.7	18.3	58.6
14	7.8	14.3	17.9	60.0
15	12.4	23.2	21.5	42.9
16	13.6	20.7	20.6	45.1
17	11.8	28.0	26.4	33.8

Source: Compiled from data provided by the Kentucky State Department of Education.

percentage of teachers with little or no experience. The regions of the state adjacent to the Ohio River from Union County to Northern Kentucky and in Fayette County (Regions 3, 6, 7, 8, and 17) had a larger percentage of beginning teachers and a smaller percentage of teachers with 10 or more years of experience.

As shown in Table 9, the analysis of the data on teacher experience with school districts grouped based on the wealth index indicated that districts with a low wealth index (Groups 1 and 2) had a higher percentage

TABLE 9. Experience of Kentucky Public School Personnel--School District Wealth Distribution. (Groups 1-6 Low to High Wealth Index) (Expressed in Percentages)

Group	0 Years	1-3 Years	4-9 Years	10+ Years
1	11.0	18.4	19.7	50.9
2	11.1	16.5	19.8	52.6
3	11.2	20.3	21.3	47.2
4	12.3	23.0	22.6	42.1
5	12.7	20.3	24.9	42.1
6	12.7	25.8	26.6	34.9

Source: Compiled from data provided by the Kentucky State Department of Education.

of teachers with 10 years or more experience, and conversely, the group of school districts with the largest wealth index (Group 6) had a smaller percentage of teachers with 10 years or more experience and a corresponding larger percentage of teachers in the other experience categories.

When school districts were grouped by size, Table 10, the data indicated that the group including the largest school districts (Group 9) had the lowest percent of teachers in the 10+ years experience category. Group 9 also had a larger percentage of teachers in the 1-3 and 4-9 years experience categories than any other size group.

The findings concerning years of experience indicate that the area of the state with declining population had a teaching staff with more experience than the areas of the state with an increasing population.

When the data concerning the experience of the teaching staff were treated statistically using a one-way analysis of variance, there was a

TABLE 10. Experience of Kentucky Public School Personnel--School District Size Distribution. (Groups 1-9 Small to Large) (Expressed in (Percentages)

Group	0 Years	1-3 Years	4-9 Years	10+ Years
1	15.6	20.0	15.0	49.4
2	13.5	20.3	19.6	49.6
3	12.6	18.7	18.6	50.1
4	10.5	19.3	22.3	47.9
5	11.5	18.1	20.3	50.1
6	11.4	19.6	20.8	48.2
7	11.7	19.2	21.2	47.9
8	11.7	21.3	21.7	45.3
9	12.3	24.0	25.8	37.9

Source: Compiled from data provided by the Kentucky State Department of Education.

statistically significant difference at the .05 level in the 1-3 years experience and 10+ years experience categories when school districts were grouped by regions and grouped by the wealth index.

Training of Staff

The state of Kentucky employed 33,939 teachers in 1971-72 with all but 295 or 0.9 percent holding at least a Bachelor's degree and a regular teaching certificate. At the other end of the degree continuum, 28 percent of the professional education personnel held a Master's or higher degree. The regional breakdown shown in Table 11 indicates that in regions 1, 4, 8, and 17 at least 33 percent of the professional staff held at least a Master's degree. These areas are in close proximity to four of the state universities. They are the extreme western sections of the state which

TABLE 11. Training of Kentucky Public School Personnel--School District Region Distribution. (Expressed in Percentages)

Region	Rank I (Master's +30)	Rank II (Master's)	Rank III (Bachelor's)	Rank IV (No Degree)
1	9.1	27.3	63.0	0.6
2	7.1	22.3	69.8	0.8
3	7.2	22.9	69.2	0.7
4	8.7	26.0	64.6	0.7
5	6.0	20.7	72.2	1.1
6	2.9	20.8	75.1	1.2
7	4.1	19.8	74.1	2.0
8	3.7	30.0	65.6	0.7
9	4.4	19.0	76.0	0.6
10	3.1	15.6	80.6	0.7
11	2.8	15.3	80.6	1.3
12	3.9	13.3	81.9	0.9
13	4.1	19.6	75.4	0.9
14	7.8	17.0	74.1	1.0
15	6.0	20.4	72.8	0.8
16	4.4	21.1	74.0	0.5
17	8.5	27.6	63.8	0.1

Source: Compiled from data provided by the Kentucky State Department of Education.

includes Murray State University (Region 1), the region in the south central part of the state which includes Western Kentucky State University (Region 4), and the regions which include the University of Louisville (Region 8) and the University of Kentucky (Region 17). By contrast, three regions had staffs with less than 20 percent of their instructional personnel holding at least a Master's degree (Regions 10, 11, 12). These regions are all in the extreme eastern section of the state and no institutions of higher education in these areas offered graduate programs.

The data presented in Table 12 demonstrate the relationship among school districts grouped according to wealth and teacher training. The direct relationship between the two variables is evident--the wealthier the school district, the greater the percentage of teachers with advanced degrees. Over 32 percent of the teachers in Groups 5 and 6 (the wealthier districts) had Master's degrees or better while the comparable figures for Groups 1, 2, and 3 (the poorer districts) indicate that less than 23 percent of their professional educators had a Master's degree or better. Only a slight difference was observed in the percentage of teachers without degrees, with the two wealthier groups of school districts having a smaller percentage without degrees than the three groups of school districts at the other end of the wealth continuum.

TABLE 12. Training of Kentucky Public School Personnel--School District Wealth Distribution. (Groups 1-6 Low to High Wealth Index) (Expressed in Percentages)

Group	Rank I	Rank II	Rank III	Rank IV
1	5.3	18.6	75.1	1.0
2	5.4	18.4	75.2	1.0
3	5.4	19.0	74.4	1.2
4	4.6	20.7	73.8	0.9
5	8.1	24.2	67.2	0.5
6	4.9	29.0	65.5	0.6

Source: Compiled from data provided by the Kentucky State Department of Education.

As revealed in Table 13, the analysis of school districts grouped by size as related to the training of the professional staff did not indicate the

TABLE 13. Training of Kentucky Public School Personnel--School District Size Distribution. (Groups 1-9 Small to Large) (Expressed in Percentages)

Group	Rank I	Rank II	Rank III	Rank IV
1	4.7	18.2	75.3	1.8
2	5.1	25.0	68.5	1.4
3	5.9	22.6	70.2	1.3
4	7.2	18.4	73.1	1.3
5	6.6	21.4	71.3	0.7
6	5.2	18.2	75.5	1.1
7	3.8	17.8	77.6	0.8
8	5.8	21.4	72.2	0.6
9	5.0	25.8	68.4	0.8

Source: Compiled from data provided by the Kentucky State Department of Education.

differences which were apparent when districts were grouped by region or by wealth. There was some difference, however, between the grouping of the smallest districts in the state (Group 1) with 22.9 percent of the teachers with the Master's degree or better and the grouping of the largest districts in the state (Group 9) with 30.8 percent of the staff with Master's degrees or better. An apparent difference was observed in the percent of teachers without a degree. For example, the group which included the smallest districts had 1.8 percent of its teachers without degrees, while the group with the largest districts had only 0.8 percent without degrees.

The data discussed above provide evidence that wealthier school districts, to some extent larger school districts, and those school districts located in the areas of the state universities are able to attract and hold the services of a better educated teaching staff.

Statistical treatment of the data dealing with training of teachers revealed significant differences at the .05 level in the percentage of teachers in Rank I when school districts were grouped by region and by wealth. There was also a significant difference in the percentage of Rank III teachers when school districts are grouped based on wealth; the wealthier districts tended to have more Rank III teachers.

KENTUCKY TEACHER SALARIES

The economic benefits of a profession are important determinants of the quality of the personnel who are attracted to the profession. Economic benefits available to the teaching profession should be at least comparable with other occupations that require the same level of preparation.

Table 14 shows that the mean salary for all professional education personnel in Kentucky in 1971-72 was $7,817, a figure approximately $2,629 below the average of the nation as a whole and approximately $1,386 below the average of the seven states bordering Kentucky. Classroom teacher salaries were also considerably below the averages of the nation and the region as indicated in Table 15. Average classroom teacher salaries for Kentucky in 1971-72 was $7,362 compared to $8,749 for the seven states bordering Kentucky and $9,690 for the nation as a whole.

TABLE 14. Average Salaries--All Personnel

Year	Kentucky	Percent National Average	Region	Percent National Average	U.S.
1961-62	$ 4,250	74.4	$ 4,963	86.8	$ 5,716
1970-71	7,623	78.6	8,267	85.2	9,698
1971-72	7,817	74.8	9,203	88.1	10,446

Source: National Education Association, Ranking of the States, 1962, 1971, 1972.

TABLE 15. Average Salaries--All Classroom Teachers

Year	Kentucky	Percent National Average	Region	Percent National Average	U.S.
1961-62	$ 4,125	74.6	$ 5,099	92.3	$ 5,527
1970-71	7,197	77.6	8,437	91.0	9,269
1971-72	7,362	76.0	8,749	90.3	9,690

Source: National Education Association, Ranking of the States, 1962, 1971, 1972.

The research analysis conducted during the study indicated that in Kentucky the three variables--geographic location, size, and wealth were critical factors in the determination of salaries paid to teachers. An analysis of teacher salaries paid in 1970-71 and the effects the three variables have on teacher salaries is contained in the following discussion.

Geographic Location

The region of the state did appear to be an important factor in terms of salaries paid classroom teachers; these data are contained in Table 16. The school district mean salary was lower in the rural areas than in the urban areas of the state. The range was from a low mean of $6,549.64 in Region 12 (Hazard area) and $6,617.78 in Region 16 (Madison-Lincoln Counties) to $8,626.50 in Region 8 (Louisville and Jefferson County) and $7,538.00 in Region 17 (Fayette County). There was a difference of $2,076 in the school district means of the low and high regions of salaries paid classroom teachers in the low and high regions.

TABLE 16. 1970-71 Mean Classroom Teacher Salaries in Kentucky Regional Distribution

Region	Number Districts	Mean Salary Range	Mean
1	12	$ 6,423-7,560	$ 6,785.25
2	14	6,380-7,194	6,732.00
3	10	6,092-7,804	6,975.00
4	15	6,381-7,307	6,713.40
5	13	6,319-8,071	6,884.62
6	8	6,769-7,018	6,893.50
7	22	6,074-8,520	6,711.00
8	3	8,275-8,855	8,626.00
9	11	6,532-6,771	6,656.36
10	10	6,367-7,476	6,866.40
11	7	6,361-7,259	6,718.14
12	11	6,362-6,773	6,549.64
13	16	6,422-7,871	6,749.88
14	14	6,370-7,077	6,747.00
15	16	6,331-7,328	6,806.75
16	9	6,172-6,920	6,617.78
17	1	7,538-	7,538.00

Source: Compiled from data provided by the Kentucky State Department of Education.

Statistical treatment of the data with a one-way analysis of variance indicated that when school districts were grouped by regions (EDD's) there was a statistically significant difference in the mean salaries for classroom teachers among regions at the .01 level of significance.

School District Size

In terms of salaries paid to classroom teachers, size appeared to be an important factor as shown in Table 17. The range was from a school district mean salary for classroom teachers of $6,432.42 in the size category which included the smallest school district to a $7,250.12 mean salary for classroom teachers in the size category including the largest school districts.

TABLE 17. 1970-71 Mean Classroom Teacher Salaries in Kentucky. Size Categories.

Size Category	Number Districts	Mean Salary Range	Mean
1	19	$ 6,074-8,855	$ 6,432.42
2	18	6,409-7,392	6,892.88
3	26	6,362-7,714	6,761.31
4	26	6,092-7,848	6,772.00
5	28	6,172-8,520	6,782.39
6	19	6,361-7,439	6,738.47
7	18	6,331-7,248	6,841.28
8	21	6,366-7,560	6,833.81
9	17	6,501-8,748	7,250.12

Source: Compiled from data provided by the Kentucky State Department of Education.

When the data dealing with school district mean salaries of classroom teachers grouped by school district size were treated statistically by a one-way analysis of variance, a statistically significant difference among school district size groupings at the .05 level of significance was observed.

School District Wealth

When school districts were grouped based on the wealth index, the group containing the school districts with the highest wealth index had the highest mean classroom teacher salaries. These data are contained in Table 18. Conversely, the group of school districts with the lowest wealth index had the lowest mean salaries of classroom teachers. The range of school district mean salaries of classroom teachers showed a direct relationship to wealth category grouping. The range indicated a school district mean salary of classroom teachers of $6,570.91 for districts in the lowest wealth category to a school district mean salary of classroom teachers of $7,580.50 for districts in the highest wealth category.

The statistical analysis of the data concerning wealth category grouping of classroom teacher mean salaries using a one-way analysis of variance indicated a statistically significant difference at the .01 level of significance.

Other Salary Relationships

In examining other aspects of salary scheduling in Kentucky, generally the same relationship pattern was evident as was identified for classroom

TABLE 18. 1970-71 Mean Classroom Teachers Salaries in Kentucky. Wealth Categories.

Wealth Category	Number Districts	Mean Salary Range	Mean
1	32	$ 6,361-7,013	$ 6,570.91
2	37	6,074-7,194	6,609.30
3	35	6,319-7,439	6,784.86
4	40	6,258-8,361	6,827.20
5	32	6,378-7,848	6,989.72
6	16	6,380-8,855	7,580.50

Source: Compiled from data provided by the Kentucky State Department of Education.

teachers. In terms of mean maximum salaries paid classroom teachers and mean salaries paid administrators, a statistically significant difference was found when the same three variables were used--geographic location, size, and wealth. However, when the statistical treatment was applied to mean beginning salaries using the same three variables, no statistical significant difference was found.

To summarize briefly, school district location, size, and wealth were found to be important variables when analyzing data relative to salaries paid professional education personnel in Kentucky. The examination disclosed a great variance in school district mean salaries up to $2,781 within Kentucky. In general the larger the school district, the greater the urbanization of the school district, and the wealthier the school district, the higher the average salary and the higher the maximum salary paid professional employees. No significant difference was observed in beginning salaries.

Neither the mean salary paid all professional education personnel nor the mean salary of classroom teachers in Kentucky compared favorably with either the national average or the average of the seven states bordering Kentucky. Using 1971-72 statistics in excess of $91,000,000 would have been required to raise mean salaries of professional education personnel in Kentucky to the national average and over $48,000,000 to match the average salaries of the seven states bordering Kentucky.

TEACHER MOBILITY

School districts in Kentucky rely heavily on Kentucky teacher training institutions for their annual supply of new teachers and for the upgrading of their teaching staff. Of the 33,939 teachers employed in Kentucky public schools in 1971-72, 84.1 percent of the teachers were graduates of Kentucky's higher education institutions and 14.9 percent were graduates of out-of-state teacher training institutions. As indicated in Table 19, Western Kentucky State University supplied the greatest number of professional educators--5,376 or 15.8 percent of the total. Eastern Kentucky State University was a close second with 5,079 or 15.0 percent of the professional educators of the state.

In certain districts teachers tended to be graduates of the regional state university serving their area. As shown in Table 20, Murray State University supplied 95.5 percent of the teaching staff of Lyon County schools and Morehead supplied 94.3 percent of the staff of Rowan County schools. The regional nature of the teacher training institutions and local school district recruitment procedures are apparent. For example, TABLE 19. 1971-72 Professional Education Personnel According to Teacher Training Institution Attended.

Institutions	Number	Percent
Western Kentucky	5,376	15.8
Eastern Kentucky	5,079	15.0
University of Kentucky	3,756	11.1
Morehead University	2,976	8.8
Murray State	2,460	7.2
University of Louisville	2,124	6.3
Cumberland College	958	2.8
Pikeville College	931	2.7
Georgetown College	810	2.4
Union	804	2.4
Campbellsville	651	1.9
Spalding	631	1.9
Kentucky State	385	1.1
Kentucky Wesleyan	378	1.1
Berea	308	.9
Other Kentucky	1,013	3.0
Out of State	5,067	14.9
Unknown	232	.7

Source: Compiled from data provided by the Kentucky State Department of Education.

30 school districts are in close proximity to one of the four state regional universities, Eastern, Morehead, Murray, and Western, and at least 75 percent of their professional staff had their highest degree from the nearby regional university. In addition, 24 additional school districts had at least 50 percent of their professional staff from the regional university in their area. The only other institutions in the state that supplied at least 50 percent of the staff of a local school district were Union College and Pikeville College. Pikeville College supplied 62.0 percent of the staff of Pike County schools and Union College trained 60.4 percent of the staff of Knox County School District.

TABLE 20. School Districts With at Least Fifty Percent of Teachers From One Teacher Training Institution.

Institutions							
Eastern Kentucky University		Morehead State University		Murray State University		Western Kentucky University	
District	Percent	District	Percent	District	Percent	District	Percent
Lee	83.8	Rowan	94.3	Lyon	95.5	Allen	91.0
Owsley	83.0	Menifee	87.2	Graves	88.5	Cumberland	87.0
Rockcastle	80.3	Elliott	86.0	Marshall	87.7	Warren	83.3
Estill	79.0	Lewis	85.0	Calloway	85.9	Simpson	81.4
Jackson	77.4	Bath	81.9	Livingston	85.3	Edmonson	81.0
Madison	73.5	Morgan	80.2	Ballard	81.6	Barren	80.1
Breathitt	67.2	Magoffin	75.0	Hickman	80.3	Monroe	79.2
Pulaski	63.1	Greenup	74.3	Logan	75.1	Metcalf	76.9
Garrard	62.4	Laurence	74.3	Carlisle	75.0	Grayson	75.0
Casey	62.0	Fleming	68.7	Crittenden	71.2	Hart	72.2
Powell	53.3	Johnson	56.6	McCracken	70.8	Muhlenberg	64.6
Lincoln	51.5	Martin	51.7	Caldwell	62.0	Ohio	63.2
Wolfe	51.0			Trigg	57.8	Breckinridge	55.9
				Fulton	57.5	Green	53.7
						Larue	52.0

Other: Pikeville College - Pike County 62.0 percent
Union College - Knox County 60.4 percent

Local school districts obviously were dependent on state institutions as major sources for their supply of teachers--65.3 percent in 1971-72. Out-of-state institutions supplied 14.9 percent and the remaining 19.8 percent of the professional staff were graduates of non-public institutions in the state.

A representative sample of teacher education seniors in six teacher training institutions in the state (three public, three private) were surveyed to determine what factors they considered important in seeking a teaching position. A major concern of students was geographic location, which was listed as the most important by 56.8 percent of the students surveyed. School district reputation was considered the most important factor by 33.7 percent and salary by 9.5 percent.

The data in Table 21 reflect some differences in student attitudes concerning factors important in seeking a teaching position between students attending public institutions and students attending private institutions. The students enrolled in public teacher training institutions had a greater concern for geographic location when considering a possible teaching position and students from the private institutions indicated more interest in salary.

TABLE 21. Employment Preference Priorities of Senior Teacher Education Students*

	Public Institutions	Private Institutions	Total
Geographic Location	61.4	52.9	56.8
Reputation of School District	36.4	31.4	33.7
Salary	2.2	15.7	9.5

* (expressed in percentage)

INSTRUCTIONAL STAFFING PATTERNS

A few years ago, the organization for instruction was relatively stable from district to district throughout the nation. Within the past few years, considerable interest has been evidenced in exploring new or different approaches to utilization of instructional personnel and teacher competencies. Some districts in Kentucky are now using such organizational concepts as nongrading, team teaching, and differentiated staffing. The purpose of this section of the study was to determine if there are legal restrictions that might hinder the use of non-traditional staffing patterns.

The principal provision in Kentucky statutes dealing with teacher salaries is KRS 157.350 which provides for state school support and includes the requirement that a school district must have a single salary schedule to qualify for participation in the State Foundation Program. A single salary schedule, as defined in KRS 157.350 (13) "means a schedule adopted by a local board and approved by the State Board of Education upon recommendation of the Superintendent of Public Instruction which is based on training, experience, and such other factors as the State Board of Education may approve and which does not discriminate between salaries paid elementary and secondary teachers."

In its Foundation Program Kentucky provides an allocation for teacher salaries which is determined by multiplying the number of teachers in each rank, not to exceed the number of classroom units allowed, by the amount set up in the allotment schedule. The allotment schedule considers two factors: experience (three categories: 0-3 years, 4-9 years, 10 years and over), and rank (based on training). The Foundation Program also requires that the average salary paid any rank of teachers must be at least equivalent to the allotment for that rank and that no teacher will be paid less than 93 percent of the Foundation Program allotment for that rank.

The 1970 General Assembly did include a provision in the statutes, KRS 157.420 (2) (b), which provided that the State Board of Education, upon the recommendation of the Superintendent of Public Instruction, may designate not more than 20 public schools to participate in experimentation in differentiated staffing and differentiated salary scheduling. The differentiated salaries could be based on training, experience, school duties beyond the school day, responsibility for a staff team, responsibilities for preprofessionals (student teachers and interns), responsibility for paraprofessionals and aides, responsibility for in-service programs within and beyond the school day and school term, research, and other factors determined by the local board of education and approved by the State Board of Education at the time application to participate in the program is made. The law further provided that no teacher would receive less pay by the application of such differentiated salary factors than he or she would have received under KRS 157.390 as it existed in 1968-70. This provision for experimental differentiated staffing and differentiated salary scheduling was not renewed by the 1972 General Assembly and, therefore, lapsed. Officials in the State Department of Education reported that no applications were received that could not have been approved under previously existing regulations, therefore, there was no need to renew the special provisions.

Kentucky Assistant Attorney General Carl Miller in an opinion dated November 14, 1972, dealt with the legality of differentiated salary scheduling based on the factors commonly associated with differentiated staffing. Mr. Miller's opinion stated:

> KRS 157.390 sets forth a scheme of ranking teachers in Rank I through Rank VII which is based entirely on training. For instance, Rank I means "those holding regular certificates and who have a Master's degree and have earned thirty hours of approved graduate work." Each biennial appropriation of the General Assembly for the Foundation Program provides the amount a teacher is to receive from the program according to his rank and adjusted according to years of experience--0 to 3, 4 to 9, and 10 years and over. This classification according to training and experience cannot be altered by such considerations as you state are effective in a differentiating program. New legislation will probably be required if such a program is adopted on a general basis.

This opinion would seem to indicate a need for statutory provisions if local districts desire to develop staffing patterns involving differentiated salary scheduling.

SCHOOL DISTRICT INSTRUCTIONAL BUDGETS

Kentucky local school districts are spending a major portion of their current expense funds for instructional services. In 1970-71 Kentucky school districts expended 81.9 percent of their total current expense expenditures (exclusive of pupil transportation) for instruction. The range in school district instructional expenditures as a percentage of current expenses was from 88.8 in Clay County School District to 60.8 percent in the Science Hill School District. The mean percent for all county districts was 83.2 percent and for independent districts the mean was 79.7 percent. All figures are based on current expense expenditures for the 1970-71 fiscal year exclusive of pupil transportation. Instructional expenses include all budget Code

200 items which reflect salaries of all instructional personnel and direct support services of the instructional program such as library supplies, supplementary books, testing, and instructional supplies.

When school districts grouped by size, as shown in Table 22, the analysis of data on school district instructional budgets indicated a positive correlation between school district size and percent of the current expense budget expended for instructional services. School districts in the first size category (lowest ADA) had a mean of 75.6 percent of their current expense expenditures for instructional services while the five groups containing the largest school districts had a mean of more than 83.2 percent. The data also show that independent school districts generally expended a smaller percentage of their current expense budget for instruction than did county school districts in the same size category.

TABLE 22. School District Instructional Budgets as Percent of Current Expenses. Size Categories.

Category	No. Cases	Range	Means Independent	 County	 Total
1	19	60.8-82.2	75.4	79.4	75.6
2	18	70.3-84.1	80.0	81.5	80.2
3	26	77.6-84.4	81.0	82.0	81.4
4	26	76.3-86.8	81.6	81.5	81.5
5	28	79.2-86.7	80.3	83.8	83.2
6	19	80.2-87.2	84.3	83.6	83.8
7	18	80.6-87.9	82.1	83.6	83.4
8	21	77.8-88.8	81.8	82.7	83.3
9	17	77.8-86.4	81.4	84.5	83.9

Source: Compiled from data provided by the Kentucky State Department of Education.

The data on school districts grouped by the wealth index (Table 2) indicated that the poorer school districts spent a larger part of their current expense budget for instruction than did the wealthier districts (Table 23). The category containing the poorer school districts had a mean of 83.2 percent of their current expense budget spent for instruction as compared to a mean of 80.1 for the group made up of the wealthier school districts. Also, the mean percent of independent districts current expense expenditures for instruction was considerably less than that county school districts in all wealth categories.

TABLE 23. School District Instructional Budgets as Percent of Current Expenses. Wealth Categories.

Wealth Category	No. Cases	Range	Means		
			Independent	County	Total
1	32	60.8-88.8	73.3	84.3	83.2
2	37	73.2-86.9	77.6	82.8	82.5
3	35	77.1-86.6	81.7	83.3	82.9
4	40	70.1-86.1	79.2	82.3	80.9
5	32	64.9-86.1	80.2	82.8	80.6
6	16	75.7-85.1	79.7	82.7	80.1

Source: Compiled from data provided by the Kentucky State Department of Education.

No clear differentiation could be found when the data concerning school district instructional expenses as a percent of total current expenses were examined on a regional basis (Table 24). The only region with a mean below 80.0 percent of the school district's current expenses spent for instruction was Region 8 (Jefferson County) which includes the two largest school districts in the state and one of the smallest. The overall range was from a mean of 79.9 percent in Region 8 to 83.4 percent in Region 11. The only region in which independent school districts had a higher percentage of current expenses spent for instruction than county school districts was Region 3.

TABLE 24. School District Instructional Budgets as Percent of Current Expenses. Region Categories

Region	No. Cases	Range	Independent	County	Total
1	12	76.4-86.3	80.4	81.5	81.1
2	14	75.7-84.7	80.2	82.5	81.7
3	10	79.4-86.8	84.1	82.4	82.9
4	15	77.9-85.7	82.5	83.2	83.0
5	13	64.9-86.7	77.0	84.1	81.4
6	8	80.2-85.3	80.5	82.7	82.1
7	22	71.9-86.1	79.1	82.6	80.5
8	3	77.8-82.9	78.4	82.9	79.9
9	11	79.4-85.3	81.2	82.7	82.4
10	10	77.6-86.6	79.9	83.9	81.9
11	7	78.9-86.2	80.3	84.7	83.4
12	11	73.8-86.9	78.3	82.9	81.6
13	16	76.1-88.8	80.5	86.0	83.2
14	14	60.8-85.5	76.3	84.1	81.9
15	16	76.3-85.3	79.7	82.5	81.5
16	9	70.3-84.7	77.1	82.9	80.9
17	1	82.5-		82.5	82.5

Source: Compiled from data provided by the Kentucky State Department of Education.

ADMINISTRATIVE AND SPECIAL INSTRUCTIONAL SERVICE UNITS

The Kentucky Foundation Program provides classroom units for superintendents, principals, certificated assistants, principals, and special instructional service personnel. These units are called administrative and special instructional service (ASIS) units and the number of such units is determined by adding basic classroom units, vocational units, and exceptional children units and dividing the sum by eight. The quotient is the number ASIS units allotted to the school district. This formula has remained unchanged since the Foundation Program was fully financed in 1956.

The first year of full implementation of the Foundation Program in 1956-57 found a Foundation Program allotment of 2,120.5 ASIS units, but local school districts actually staffed 2,564.9 ASIS units in 15 different positions. The units staffed were 120 percent of the units allocated. During the 1970-71 year 3,314.0 ASIS units were allotted, and 5,107.1 ASIS units were actually staffed in 35 different positions by local school districts. The 1970-71 data show that school districts actually staffed 154 percent of the ASIS units allocated under the present provision of the Foundation Program. Data for 1956-57, 1964-65 and 1970-71 are contained in Table 25. These figures reflect the rapid growth in the use of ASIS units, the increasing inadequacy of the present allocation formula, and the willingness of local districts to staff ASIS units beyond the number allocated in the program.

The Department of Education, on the authority of State Board of Education Regulation 40.110 (5), may transfer to the category of basic

TABLE 25. Comparison of ASIS Units for 1956-57, 1964-65, and 1970-71

Positions	1956-57	1964-65	1970-71
Superintendent	214.6	203.1	192.0
Assistant Superintendent	40.5	74.5	97.5
Finance Officer	19.5	48.0	43.0
School Business Administrator	0	0	5.0
School Lunch Director	11.1	39.0	39.1
School Attendance Worker	43.0	52.0	24.5
School Social Worker	0	0	20.0
Principal	755.8	1,037.0	1,151.3
Assistant Principal	53.3	139.3	215.4
Art Program Consultant	0	0	1.0
Health & P.E. Program Consultant	0	6.7	8.8
Music Program Consultant	0	3.0	3.5
Reading Program Consultant	0	3.0	1.5
Consultant in Academic Sub. Field	0	0	7.1
Special Educ. Work-Study Prog. Consultant	0	0	1.0
Art Education Teacher	79.7	232.5	288.8
Driver Education Teacher	27.0	38.0	73.1
Industrial Arts Education Teacher	177.2	310.9	304.5
Music Education Teacher	451.5	699.1	684.9
Physical Education Teacher	337.6	488.7	631.2
Librarian	305.7	595.4	815.1
Materials Specialist	0	4.8	4.0
Guidance Counselor	45.9	297.1	485.2
School Psychologist	2.5	7.0	9.6
Total Staffed	2,546.9	4,209.2	5,107.1
Total Allotment	2,120.5	2,974.7	3,314.0

Source: Compiled from data provided by the Kentucky State Department of Education.

units certain ASIS units that are in excess of the allocated ASIS units. If the school district has a deficiency in basic units, State Board of Education Regulations provide that five ASIS categories may, upon approval of the Superintendent of Public Instruction, be transferred to basic units. The five categories that may be transferred are those for teachers of industrial arts, art education, driver education, music education, and physical education. The number of units transferred may not exceed basic unit deficiency (basic units allotted but not staffed). In the final allotment to school districts in 1970-71, the Department of Education transferred 313.[illegible] units from ASIS to the category of basic units. The Louisville School District qualified for the transfer of 75.1 units from ASIS to basic. This was the greatest number transferred by any school district.

An analysis of the allotment and use of ASIS units in 1970-71 indicated that the only unit staffed in all school districts was the unit for the superintendent. Three school districts were allotted one ASIS unit or less. Seven school districts staffed the exact number of ASIS units allotted under the Foundation Program. These districts were all rather small and had very limited local fiscal capacity. These seven districts were a contrast to 16 school districts that had staffed ASIS units at least 200 percent of the allotted ASIS units with one district staffed 307 percent of the allotted ASIS units.

The present formula for allocation of personnel units is not meeting the needs of Kentucky public school districts. Some alternative plans are submitted for consideration.

Alternative A. The Kentucky Education Association Plan. The Kentucky Education Association Committee for the Study of the Foundation Program made a detailed study of the Foundation Program in 1965-66. The study report, Beyond the Minimum, made several recommendations for changed procedures in the allocation of ASIS units. The Committee recommended that one ASIS unit be allotted for every seven instead of every eight classroom units (basic units plus vocational and exceptional children units), that superintendents be removed from the ASIS list and allocated as a unit for each district that has more than 50 classroom units, and that the classification for teachers of industrial arts, art education, driver education, music education and physical education be changed from ASIS to basic units. The Committee also recommended that the pupil-teacher ratio for allocation of basic units be reduced from 27 to 1 to 25 to 1. This change would provide additional classroom units for staffing the five categories of teachers listed above that are now ASIS units. The Committee also recommended that supervisors of instruction and directors of pupil personnel be included in ASIS calculations as they fit the definition of ASIS units.

If the plan advocated by the Kentucky Education Association had been in effect during the 1970-71 year, the results would have been as follows:

Effect of KEA 1967 Plan on 1970-71 Final Calculations

	Units Under KEA Plan	Actual Units 1970-1971	Increase or Decrease
Basic	25,868.0	23,952.0	1,916.
Vocational	1,525.0	1,525.0	---
Exceptional Children	1,052.9	1,052.9	---
ASIS	4,063.6	3,314.0	749.6
Supervisor of Instruction	---	267.1	(267.1)
Director of Pupil Personnel	---	227.2	(227.2)
Superintendent	192	---	192
TOTALS	32,701.5	30,338.2	2,363.3

The adoption of the Kentucky Education Association plan would have resulted in an increase of 2,363.3 personnel units in 1970-71. Using the average salary paid all professional personnel in Kentucky in 1970-71 ($7,817) as the base, the implementation of the KEA plan would have resulted in an additional cost of $18,473,916.

Alternative B. Full State Funding. This alternative proposes that the state assume the total cost of the educational program so that education may be equalized for all pupils and school finance not be primarily dependent on local taxes. If the full state funding concept were to be applied to personnel formulas and personnel allocation, the state would have to determine what constitutes an adequate basic education program and what personnel would be necessary to implement the basic program. Of necessity, the state would be involved in key decisions affecting the local school district's educationalprogram, and the alternative would have broad implications for the autonomy of local school districts. The full state funding of professional education personnel could result in local school districts having flexibility in the allocation of personnel as is presently true in West Virginia where the state formula provides partial support for up to 55 professional educators for each 1,000 pupils in average daily attendance. The state does not have strict requirements on the utilization of the personnel spaces authorized.

A move to full state funding would not of necessity incorporate personnel allocation because funds could be distributed on another basis such as a weighted pupil grant with little restriction on how the funds are to to be used by the local school district. Most advocates of full state funding also would require a statewide salary schedule for all professional personnel and in some cases, non-professional personnel.

The Hawaii state plan is based upon the full state funding of personnel. Hawaii distributes state education funds primarily on the basis of a personnel unit formula similar to the plan in effect in Delaware discussed in Alternative C, however, in Hawaii localities cannot supplement state funds with local revenues. The basic formula in Hawaii for the allocation of personnel is based on enrollment. Unlike all other states which differentiate between costs for elementary and secondary grades, Hawaii provides for a smaller class size in the early childhood grades, thus allocating more funds for these students than for secondary students.

Alternative C. The Delaware Plan. Delaware distributes education funds primarily on the basis of a personnel classroom unit formula. The basic formula for the allocation of teachers is based on enrollment:

Grades 1-6	One unit for 25 pupils or major fraction thereof
Grades 7-12	One unit for 20 pupils or major fraction thereof

Classroom units are smaller in the case of exceptional children ranging from a 1-15 ratio for educable mentally retarded to a 1-6 ratio for the trainable mentally retarded. Delaware also provides separate occupational-vocational units based on pupil minutes per week. In the case of kindergarten, the unit is based on 50 pupils or two instructional groups of 25 pupils each.

Special units are allocated on a formula basis as follows:

1. Chief School Officer - 12 months - one per district
2. Assistant Superintendent - 12 months - one per full 300 state units of pupils not to exceed two.

3. Directors - 12 months - one for first full 200 state units and one for each additional full 100 state units not to exceed six.

4. Administrative Assistant - 12 months - one per district

5. Supervisors - 10 months - one for each full 150 state units.

6. Specialist-Psychologist - 10 months - one for each full 150 state units.

There are additional unit allocations - for other specialists, for Principals, for Supervisors, for clerical and custodial positions, and others. The state establishes a state salary schedule for most positions, including some non-professional positions.

Alternative D. The Virginia Plan. The Virginia state plan allocates personnel units to local school districts as follows:

1. Teaching positions - defined as one position for each 30 pupils in average daily membership in elementary grades (K-7) and one position for each 23 pupils in average daily membership in high school grades (8-12).

2. One administrative position.

3. One position for each 50 state aid teaching positions, for supervisors of instruction, visiting teachers, and supervisors of special education, not exceeding 20 of such positions for any one division.

4. Positions for principals, assistant principals, librarians, high school guidance counselors, a number sufficient to comply with accreditation standards.

The Virginia plan is unique because personnel unit allocations are based on accreditation standards.

Alternative E. The Alaska Plan. Alaska allocates instructional personnel units on an average daily membership basis with a different formula for large and small schools. The formula also has provisions for instructional units for vocational education and for special education. The instruction unit has a dollar value assigned and is adjusted for certain areas that are in the more remote parts of the state. The present value of the basic instructional unit is $19,250.

Alternative F. The Tennessee Plan. In the Tennessee Plan teaching positions are authorized based on average daily attendance for each of the highest two months of the first three months of the current school year on a graduated scale by schools. For elementary schools the pupil-teacher ratio ranges from 20-1 to 1,490-50. A supervising principal may be assigned to an elementary school using and qualifying for 15 or more full-time teachers and a one-half position for a librarian in elementary schools earning and using 15 through 19 full-time positions. A full-time position as librarian may be included, if used, in elementary schools earning and using 20 or more full-time teaching positions.

Tennessee uses a similar formula for secondary schools except that the number of teaching positions includes the principal. The pupil-teacher ratio for secondary schools ranges from 75-4 to 1,538-55 with an additional full-time teaching position for each additional 30 pupils in average daily attendance. Provisions for librarian and guidance counselor positions are based upon number of secondary teaching positions earned and used during the current year.

The Tennessee Foundation program has provisions for teaching positions for exceptional children based upon the ADA of exceptional children within categories of exceptionality.

System-wide positions for supervising teachers of instruction, attendance teachers, materials supervising teachers, school psychologist, school psychologist service-worker, and school food service supervisor are allocated based upon teaching positions allowed and used.

Alternative G. The North Carolina Plan. The North Carolina procedures for the allotment of teachers and other personnel resemble Delaware, but there are some differences. The allotment of teachers to schools is based on the following formula:

	Teachers	
Grades 1-3	6	153 plus one teacher for each additional 27 pupils in ADA
Grades 4-8	6	171 plus one teacher for each additional 30 pupils in ADA
High School	4	First 60 for each additional high school plus one teacher for each thirty pupils thereafter.

Additional allotments are calculated for administrative units on the basis of one position for each 15 positions allotted under the base allotment. Provisions are also made for a separate allotment of teachers and therapists to be used in programs for exceptional children. North Carolina has separate allotment provisions for employemnt of supervisors, assistant superintendents, and attendance counselors.

SUMMARY

This study has documented differences in teacher characteristics and salaries paid the professional staff among Kentucky school districts. The report described the professional education personnel in Kentucky public schools by taking into account the selected school district variables of geographic location, size, and wealth.

Differences related to geographic region were found. The best qualified teachers (in terms of advanced degrees) were found in the areas of the state in close proximity to a state university. There appeared to be a relationship between those regions of the state that were declining in population and teacher age and teaching experience. Those areas of the state with stable or declining pouplations had a higher average level of teaching experience than did the regions that were increasing in population. The greatest difference was found in the average teacher salaries among regions. The regions encompassing the urban areas of the state had a significantly higher salary than the regions which included the rural areas of the state.

Differences were associated with the size (average daily attendance) of school districts. Generally the larger school districts had a lower mean age and level of experience of their professional staff than did the smaller districts. The school districts in the largest size category had the highest mean salaries for teachers, and the lowest mean salaries were in the category containing the smallest school districts. No significant difference was found in level of training when school districts were grouped by size.

A marked relationship appeared to exist between school district wealth (in terms of the wealth index) and mean salaries of classroom teachers. The school districts in the lowest wealth category had the lowest mean classroom teacher salaries while the school districts in the highest wealth category had the highest mean classroom teacher salaries. The same correlation was evident when considering training of the professional staff, the school districts in the highest wealth category had a higher percentage of their staff with advanced degrees. The findings of the study also indicated that the school districts in the lower wealth categories had a higher average level of teaching experience and a higher average teacher age.

The average salaries of Kentucky teachers did not compare favorably with corresponding averages of the nation or of the seven states contiguous to Kentucky. In 1971-72 the average teacher salary in Kentucky was only 74.8 percent of the national average, whereas the seven states adjacent to Kentucky had average teacher salaries 88.1 percent of the national average. In 1971-72 it would have cost approximately $48,000,000 to raise the salaries of Kentucky professional educators to the average of the seven states contiguous to Kentucky and $91,000,000 to meet the national average.

Kentucky school districts relied heavily on Kentucky teacher training institutions for the recruiting of new teachers and for the upgrading of their professional staff. Eighty-four percent of Kentucky teachers in 1971-72 were graduates of Kentucky teacher training institutions. A survey of a sample of teacher education seniors in six Kentucky teacher training institutions disclosed that 58.6 percent of the students surveyed indicated that geographic location was the single most important factor in seeking a teaching position. The regional character of the four state regional institutions was reflected by the large percentage of graduates of these institutions who were teaching in the immediate area of the university.

There seems to be some question as to the legal right of Kentucky school districts to implement an instructional plan which provides for differentiated salary scheduling. The Kentucky Attorney General's Office indicated in an opinion dated November 14, 1972, that new legislation would probably be required if such a program were adopted on a general basis.

Kentucky school districts were spending a major portion of their current expense funds (exclusive of transportation) for instruction, in 1970-71 the figure was 81.9 percent for the state. The analysis of the data indicated that county school districts, larger school districts, and the poorer school districts all spent a larger percentage of their current expense budgets for instruction than did independent districts, smaller districts, and wealthier districts. The poorer districts, many of which are large county districts, had little flexibility in their budget making process since they had to obligate a very large part of their current expense budget for instruction in order to meet the state salary requirements.

The allocation of administrative and special instructional service units (ASIS) under the present Foundation program formula is inadequate to meet the requirements of Kentucky school districts. School districts were staffing 154 percent of the units allocated in 1970-71. Most of the excess units were in the wealthier districts because the poorer districts did not have sufficient leeway in their budget to provide services beyond the minimum.

A strong and able professional staff is a fundamental requisite for a sound educational program in Kentucky. Kentucky has been fortunate in the progress made in recent years in many facets of its educational system but unfortunately there are two areas of little progress: teacher salaries are not comparable to other states in this region or to the national average, and the personnel allocation formula for sufficient teaching and special instructional service personnel is inadequate in terms of the current staffing patterns in local school districts.

FINANCING CAPITAL OUTLAY*

During the post World War II period states and local school districts have been giving increasing attention to the capital outlay needs of local school districts. School enrollments have mushroomed and the population has become much more mobile than in previous years. For several years the backlog of need for facilities was so great that uniform flat grants on a pupil or classroom unit basis to school districts provided a logical approach for state participation in capital outlay and debt service programs. With the decline in farm population and increasing urbanization of society, pupil populations are stabilizing or declining in rural areas, increasing in suburban areas, and changing their composition in urban areas. For these reasons traditional methods of allocating state funds for capital outlay and debt service have become outmoded.

The challenge in devising methods for state participation in capital outlay and debt service programs is to design programs which will recognize the differences in the level of need for educational facilities among local school districts, encourage districts to replace educationally obsolete facilities, and allocate sufficient funds to permit local school districts to provide adequate housing for pupils without excessive and unequal tax burdens. This latter problem is highly significant in Kentucky because of the backlog of need for replacement of obsolete or inadequate facilities in poverty-stricken rural areas and the need for additional facilities in urban areas so that sufficient housing will be available for pupils.

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*A study performed by Salvatore Matarazzo, Professor of Education, Murray State University.

Importance of the Study

From 1967-68 to 1972, over $183,000,000 was spent for public school facilities. Local school debt had increased to over $469,000,000 by July 1, 1972. Debt service payments were nearly $30,000,000 a year by July 1, 1972. A backlog of building needs was estimated in December 1972 to be $309,094,420.

Among the 190 school districts, in 1971-72, a wide range of patterns was used to fund school facilities.

Design of the Study

This study includes several activities. A brief historical background is presented with emphasis on the Minimum Foundation Program. The existing program for capital outlay is described. The local and state effort, bonding potential, construction costs, debt service rates, future building needs, and many other statistics are examined. The adequacy of the present capital outlay program is evaluated. Finally, conclusions and recommendations are presented.

The planning phase of the study was to submit a study design for approval. The second phase was devoted to gathering pertinent data available from the Kentucky State Department of Education, research and publications of the National Educational Finance Project, public finance specialists, and other sources. The final phase of the study involved the refinement and analysis of existing finance models that were pertinent to the situation as it exists in Kentucky.

In 1895, Superintendent of Public Instruction, Porter Thompson, in his biennial report said, "Local taxation by districts, subject to the will of the people, is a failure."[1] Porter Thompson's words have a significant meaning for us today. Although states try to equalize distribution of money among districts, they are usually unsuccessful. Grants per pupil, foundation grants, and incentive grants do not equalize rich and poor districts. In Kentucky, the Minimum Foundation Program, which guarantees a minimum per pupil for any district taxing at an ordered, designated level has resulted in a wide range of unequal expenditures for children. This wide range is caused by permissive taxes which result in unequal amounts of funds and resources being available to school districts within the state.

It has been frequently stated, and it was reiterated by Coons, Clure, and Sugarman, ". . . we accept as a fact the positive relation between the cost and quality of education."[2]

In Kentucky, education is clearly delineated by the state constitution as a state responsibility. "The general assembly shall, by appropriate legislation, provide for an efficient system of common schools throughout the state."[3]

The state of Kentucky now has a varied program for capital outlay:

1. The Minimum Foundation Program, as amended in 1972, allocates $1,300 per classroom unit for capital outlay and debt service; the amount is scheduled to be increased to $1,400 in the 1973-74 school year.

2. The State Department of Education, through its Division of Building and Grounds, makes surveys of the building needs of all local school districts.

3. Plans for school buildings, additions or alterations must be approved by the Superintendent of Public Instruction before contracts are awarded.

4. The Kentucky State Department of Finance through the Kentucky State Department of Education mandates the required local tax rate for a school district to share fully in the Minimum Foundation Program.

5. As of 1970, authorized by KRS 160.475, 114 districts levy a poll tax of $2.00, five districts levy a poll tax of $1.50, and 12 districts levy a poll tax of $1.00.

6. In 1966, the Kentucky General Assembly passed a law to allow a school district in which 90 percent of the county inhabitants reside to make use of one of three non-property taxes without a public vote, after publication of notice of such interest and after a public hearing. The three alternative taxes were a .3 percent utility gross receipts tax, a .5 percent occupation tax (increased to 1 percent for Louisville and Jefferson Counties in 1972 legislative session) and an excise tax on state income tax liability at a rate not to exceed 20 percent. No more than one of these taxes can be in effect at any one time. As of 1972, 42 districts were using the utility gross receipts tax and four districts were using the occupational tax while no district had an excise tax on the state income tax.

7. The Special Voted Building Tax authorized in KRS 160.477 allows any local school board to request the tax levying authority to adopt an ordinance or resolution to submit to the voters a special school building tax of not less than five cents nor more than 50 cents on each $100

of assessed property valuation. A simple majority is required for approval of the tax. At the time of this study, 102 districts were making use of this tax. The income from the tax must be used for purchasing or leasing of school sites and buildings, equipping of existing buildings, retiring school revenue bonds issued for such school building improvements directly or through rental payments, and financing any program for the acquisition, improvement, or building of schools.

8. The Special Voted Tax for General Purposes is authorized in KRS 157.440. The same procedure for passage as KRS 160.477 is stipulated. The tax may be used for any school expenditure including capital outlay. Presently, 31 districts are utilizing this tax.

9. Sinking Fund Tax authorized by KRS 162.080 is for a specific bond issue for building purposes. It limits the rate of interest to six percent. The tax levy, if approved by the voters, is to pay the interest and to create a sinking fund to retire bonds at their maturity. Three school districts, presently, have this tax and one is for Ashland Junior College.

School Building Construction Programs in Kentucky

The Present Program. The Minimum Foundation Program now provides $1,300 per classroom unit for capital outlay. This will be increased to $1,400 in the 1973-74 school year.

Originally, in 1954, the Foundation Program provided $400 for capital outlay. In 1960, the capital outlay allotment was increased to $600 per classroom unit. In 1968, the capital outlay allotment was raised to $1,200. A statewide study in 1965-66, published in 1967, "Beyond the

Minimum," showed that public schools were spending $1,346.39 per classroom unit for capital outlay. At the time of the study, the capital outlay allotment in the Foundation Program was $600 per classroom unit. In the school year 1970-71, the public schools of Kentucky spent $60,587,700.81 for capital outlay and debt service. Of this total $7,036,893.23 was from the general fund of school districts; $28,061,767.80 came from special voted building fund taxes and $25,489,039.78 came from the Capital Outlay Fund of the Foundation Program. In the 1970-71 school year, the average cost per classroom unit for the state was $1,961.72. The capital outlay expenditures among districts ranged from $420.68 to $7,220.03 per classroom unit.[4]

In the 1971-72 school year, the total capital outlay and debt service expenditures were $68,060,446.89. Of this total $7,038,010.70 was from the general fund, $36,049,201.81 came from the special voted building fund taxes, and $24,973,234.38 was from capital outlay of the Minimum Foundation Program. The average expenditure per classroom unit was $2,179.37. The range among the 190 districts was from $532.47 to $5,915.97.

Table 1 shows the amounts spent for school building construction, site, equipment for elementary, secondary, and vocational schools. From 1967-68 to 1971-72, $92,926,130.46 was spent for elementary schools. Secondary school construction costs for the same period were $72,075,957.95, and construction costs for vocational schools were $18,518,970.27. These expenditures, a total of $183,521,059.17, represent 50.6 percent for elementary schools, 39.3 percent for secondary schools, and 10.1 percent for vocational schools.

TABLE 1. Expenditures for School Building Construction, Site, Equipment. Kentucky Public Schools, Elementary Schools, Secondary and Vocational Schools

Date	Elementary	Secondary	Vocational	Total
1967-68	$ 18,493,720.28 39%	$ 25,551,087.30 53%	$ 3,336,847.00 7%	$ 47,381.654.58
1968-69	16,749,198.47 45%	15,382,040.21 41%	5,041,810.33 13%	37,173,049.01
1969-70	14,784,336.25 46.6%	16,066,370.58 50.2%	861,805.94 2.2%	31,712,539.77
1970-71	21,012,890.00 77.2%	2,832,886.00 10.6%	3,181,599.00 11.2%	27,027,375.00
1971-72	21,885,958.46 54%	12,243,573.86 30%	6,096,907.95 15%	40,226,440.27
Totals	92,926,130.46 50.6%	72.075.957.95 39.3%	18,518,970.27 10.1%	183,521,059.17

Table 2 shows that 95 elementary schools were built between 1967-68 and the end of fiscal year 1971-72. The cost per square foot increased 23.7 percent, from $18.32 to $22.30 per square foot. The cost per pupil has increased from $1,253.06 to $1,718.87 or an increase of 37.1 percent. The cost per classroom unit has increased from $33,832.66 to $46,409.49, or a 37.1 percent increase.

TABLE 2. School Building Construction (1967-1972) Elementary

Date	Schools	Square Foot	Cost Per Pupil	Cost Per Classroom Unit (27-1)
1967-68	21	$ 18.32	$ 1,253.06	$ 33,832.66
1968-69	19	20.29	1,291.61	34,873.47
1969-70	18	20.15	1,365.66	36,872.82
1970-71	21	21.40	1,467.38	39,619.26
1971-72	16	22.67	1,718.87	46,409.49

Table 3 shows that 38 secondary schools were built between 1967-68 and the end of fiscal year 1971-72. The cost per square foot increased to $19.95 in 1971-72 from $17.68 in 1967-68, or an increase of 12.8 percent. The cost per pupil increased from $2,047.00 to $2,344.83, or a 14.5 percent increase. The cost per classroom unit increased from $55,269.00 to $63,310.41, or a 14.5 percent increase.

TABLE 3. School Building Construction (1967-72)....Secondary

Date	Number of Schools	Cost Per Square Foot	Cost Per Pupil	Cost Per Classroom Unit (27-1)
1967-68	13	$ 17.68	$ 2,047.00	$ 55,269.00
1968-69	7	17.54	1,859.46	50,205.42
1969-70	10	16.75	1,663.77	44,921.79
1970-71	2	20.40	2,580.24	69,666.48
1971-72	6	19.95	2,344.83	63,310.41

Table 4 shows that 27 vocational schools were built from 1967-68 to the end of fiscal year 1971-72. The cost per square foot increased from $17.81 to $24.05 or an increase of 35 percent. The cost per pupil increased from $2,978.56 to $6,268.22 or an increase of 110.4 percent. The cost per classroom unit (15-1) increased from $44,678.40 to $94,023.30 or an increase of 110.4 percent.

Construction costs for elementary and secondary schools have increased at a fairly even rate, 7+ percent per elementary classroom per year and 2+ percent per secondary classroom per year. However, the construction costs for vocational schools increased over 27+ percent per classroom unit per year.

The total spent since 1960 has been over $2,500,000,000.00. From 1967 through June 30, 1972,the expenditure was $183,521,058.63.

TABLE 4. School Building Construction (1967-72)...Vocational

Date	Number of Schools	Cost Per Square Foot	Cost Per Pupil	Cost Per Classroom Unit (27-1)
1967-68	8	N/A	N/A	N/A
1968-69	11	$ 17.81	$ 2,978.56	$ 44,678.40
1969-70	2	17.29	2,831.14	42,467.10
1970-71	3	20.84	2,033.76	30,506.40
1971-72	3	24.05	6,268.22	94,023.30

Table 5 shows the effect of school building construction from 1960-61 through fiscal year 1971. There were 7,644 rooms abandoned and 13,559 rooms completed, or a net gain of 5,915 rooms. However, there were still 27,990 pupils in excess of normal capacity.

TABLE 5. Number of Pupils in Excess of Normal Capacity, Rooms Abandoned, Rooms Completed and Rooms Available from 1960 Through 1971

Year	No. of Pupils in Excess of Normal Capacity	Rooms Abandoned	Rooms Completed	Rooms Available During Year
1960-61	58,380	552	1,010	22,204
1961-62	31,860	910	1,243	23,705
1962-63	39,619	676	1,363	22,995
1963-64	30,267	752	1,378	23,664
1964-65	25,643	979	1,141	24,452
1965-66	37,950	787	864	24,961
1966-67	52,290	900	1,514	25,145
1967-68	54,450	377	1,159	25,927
1968-69	39,021	772	1,345	26,514
1969-70	33,540	545	1,385	27,509
1970-71	27,990	394	1,157	28,376
TOTALS		7,644	13,559	

Source: Statistical Information, Kentucky State Department of Education, 1971.

Table 6 shows the state and local shares for school construction, capital outlay, and debt service. When special voted local taxes, local non-property tax contributions, and local contributions from general funds are considered, in addition to Foundation Program funds, local expenditures for capital improvements are significantly higher than state expenditures for these purposes. In fiscal year 1967-68 local expenditures for capital improvements constituted almost three-fourths of the total. In 1970-71 the local share was 63.1 percent of the total.

As of January 1, 1972, there were 168.5 school buildings 50 years and older, 517 school buildings 26-49 years old, 570 school buildings 11-25 years old, and 426 school buildings 1-10 years old. The total number of mobile and portable relocatable units in use was 1,034. There are 40.8 percent of the school buildings 25 years and older; 10 percent or 168.5 are over 50 years old. The total mobile and portable relocatable units was 36.2 percent of the total buildings.

State Debt. The total local school district bonded debt for school construction has increased almost 300 percent since 1960. In the last 10 years the debt per pupil in ADM has increased from $266 to $663 in 1971-72. (See Table 7)

Table 8 shows the bond principal and interest payments for all school districts for fiscal years 1967 through 1971. The data also indicate that the debt service per pupil in ADM increased from $28.68 to $40.50 in the four year period.

TABLE 6. School Building Fund-Minimum Foundation Capital Outlay Percentage of Funds

Date	Total Balance of Receipts Capital Outlay Plus Building Fund	Minimum Foundation Capital Outlay Fund	State Share	Percent	Local Share	Percent
1967-68	$50,757,630.54	$17,463,660.00	$12,783,399.12	25.2	$37,947,231.42	74.8
1968-69	61,553,789.35	20,849,990.00	16,012,792.32	26.0	45,540,997.03	74.0
1969-70	69,978,488.46	36,536,040.00	27,734,251.86	39.6	42,244,236.60	61.4
1970-71	80,332,027.97	37,062,000.00	29,649,600.00	36.9	50,682,427.97	63.1

Source: Kentucky Department of Education, "Local District Annual Financial Reports," 1967-71.

TABLE 7. Total and Per Pupil Bonded Debt of All Kentucky

Date	School Districts Total Bonded Debt	Total ADM	Debt Per Pupil in ADM*
1961-62	$166,530,000	625,909.7	$ 266
1962-63	189,986,000	637,749.8	298
1963-64	203,133,000	649,605.0	313
1964-65	212,268,000	654,314.8	324
1965-66	226,222,500	656,639.9	345
1966-67	241,612,500	662,166.9	365
1967-68	283,457,000	674,963.5	420
1968-69	337,235,000	685,613.4	492
1969-70	372,235,000	691,616.6	538
1970-71	418,855,000	704,209.6	595
1971-72	469,173,000	707,406.2	663

*Rounded to nearest dollar

Source: Kentucky Department of Education Statistical Report, June 30, 1972.

TABLE 8. State of Kentucky Bond Principal and Interest Payments: Debt Service Per Pupil ADM

Year	Bond Principal	Bond Interest	Total	Debt Service Per Pupil in ADM
1967-68	$12,635,597.17	$ 6,725,561.95	$19,361,591.20	$ 28.68
1968-69	13,884,795.13	8,111,890.60	21,996,685.73	32.08
1969-70	15,101,718.70	9,582,230.85	24,683,949.55	35.69
1970-71	16,265,470.36	12,266,586.37	28,523,056.73	40.50

Source: Kentucky Department of Education, Local District Annual Financial Reports, 1967-71.

Table 9 shows the funds strictly designated for capital outlay and debt service plus the percent of the state and local share. School districts are using general funds for capital outlay and debt service as well, but these are not reflected on this table. Again, the local share is higher than the state share for this category.

The closing balances in the capital outlay and school building funds have been increasing. The balances have more than doubled in the four year period from 1967-71. They have increased from $10,854,374.89 in 1967 to $26,781,200.39 in 1971. In 1971, the capital outlay funds of the 190 school districts had balances of $17,890,890.27. Individual district balances ranged from 0 dollars to $596,510.61.

TABLE 9. Capital Outlay/Debt Service--State and Local Share from Minimum Foundation C.O., Special Voted Building Tax, and Sinking Fund Tax.

Year	Local Share	Percent	State Share	Percent	Total
1967-68					
Minimum Foundation Program	$ 4,680,260.88	65.4	$12,783,399.12	34.6	$36,905,705.44
Special Voted Building Tax	19,296,166.21				
Sinking Fund Tax	145,879.23				
	$24,122,306.30				
1968-69					
Minimum Foundation Program	$ 4,837,197.68	57.6	16,012,792.32	43.4	37,739,788.68
Special Voted Building Tax	16,750,678.02				
Sinking Fund Tax	139,120.66				
	$21,726,966.36				
1969-70					
Minimum Foundation Program	$ 8,801,788.14	50.7	27,734,251.86	49.3	56,643,411.17
Special Voted Building Tax	19,777,065.52				
Sinking Fund Tax	121,005.65				
	$28,699,859.31				
1970-71					
Minimum Foundation Program	$ 7,412,400.00	50.8	29,649,600.00	49.2	60,251,709.60
Special Voted Building Tax	22,996,825.09				
Sinking Fund Tax	192,884.51				
	$30,602,109.60				

Source: Kentucky Department of Education, Local District Annual Financial Reports, 1967-71.

Table 10 shows the amount that school districts with special voted building taxes have transferred to their general fund as authorized by KRS 157.420. For fiscal years 1969 through 1972, school districts were using approximately 35 percent of capital outlay monies for General Fund expenditures.

TABLE 10. Total Amount of Capital Outlay Allotments that Districts Use for General Fund Purposes

Year	Total Minimum Foundation Program Capital Outlay-State	Amount Used for General Fund	Percent of Capital Outlay Used for General Fund
1969-70	$36,536,040.00	$12,728,656.81	34.8
1970-71	37,062,000.00	13,611,072.00	36.7
1971-72	37,475,280.00	13,242,618.00	35.3

Source: Kentucky Department of Education Statistical Information, 1969-72.

Table 11 shows the amount spent from the General Fund for capital outlay and debt services. The amounts of Capital Outlay expenditures from General Funds were over 10 percent of the total. The state average expenditure for capital outlay and debt service was $1,961.72 per classroom unit in fiscal year 1970-71, and $2,179.37 for fiscal year 1971-72.

The variation per classroom unit between the individual districts ranged from $249.28 to $7,220.03 in 1970-71. The range for 1971-72 was $532.47 to $5,915.97.

TABLE 11. Amount of General Funds Spent for Capital Outlay and Debt Service by All Districts Plus Percent (1970-72).

Year	Total Amount From General Fund	Total Amount for Capital Outlay, Debt Service	Percent of Capital Outlay Expenditures From General Fund	Capital Outlay and Debt Service Average Expenditure Per Classroom Unit (All Funds)
1970-71	$7,036,893.23	$60,587,700.81	11.6	$1,961.72
1971-72	7,038,010.70	68,060,466.89	10.3	2,179.37

Source: Kentucky Department of Education, Local Districts -- Annual Financial Reports, 1970-72.

Table 12 shows the number of districts transferring capital outlay funds from the Foundation Program to the General Fund. In 1971-72 fiscal year there were 80 districts, or 42.1 percent of the school districts.

TABLE 12. Number of Districts Retaining Capital Outlay Funds for General Fund Purposes (1969-1972).

	Districts			Percent of Districts		
Year	County	Ind.	Total	County	Ind.	Total
1969-70	29	47	76	24.1	64.3	39.3
1970-71	30	44	77	25.0	61.1	40.1
1971-72	27	43	80	22.5	61.4	42.1

Source: Kentucky Department of Education, Statistical Information, 1972.

Table 13 shows the number and type of public elementary and secondary schools. There has been a decrease in one-room schools from 320 in 1966 to 47 in 1972. The total number of schools has decreased from 1,918 in 1966 to 1,599 in 1972.

TABLE 13. Number and Type of Public Schools in Kentucky (1967-1972)

		Elementary					
Date	Elementary	One Room	Two Room	Three Room	Vocational	Secondary	Total
1966-67	1,525	320	100	49	20	373	1,918
1967-68	1,408	234	63	42	29	375	1,812
1968-69	1,309	143	51	33	40	369	1,718
1969-70	1,253	112	45	30	49	360	1,662
1970-71	1,199	69	37	24	58	366	1,623
1971-72	1,179	47	29	24	64	356	1,599

Source: Kentucky Department of Education, Summary of Kentucky Education Statistics, 1971-72.

The results on special voted taxes in the past five years have been poor. Since 1968, 70.6 percent have failed. The so-called "taxpayers' revolt" is evident. Since 1966, 40.7 percent of special voted taxes passed and 59.3 percent failed. The voters, from 1966 to 1968, passed 78.9 percent of the requests. During the following years there was a decline in the number of attempts. In 1969-70, there were 18 referenda. However, in 1971-72, there were only seven. (See Table 14)

TABLE 14. School Districts Vote on Special Taxes 1967-66 Through 1972-73.

Year	Passed	Percent	Failed	Percent	Total
1966-67	8	72.8	3	27.2	11
1967-68	7	87.5	1	12.5	8
1968-69	4	26.7	11	73.3	15
1969-70	7	39.9	11	61.1	18
1970-71	2	13.4	13	86.6	15
1971-72	2	28.6	5	71.4	7
1972-73	1	50.0	1	50.0	2
Total	31	40.7	45	59.3	76

Table 15 shows the date of expiration of special voted taxes. By 1981, special voted taxes will expire in 24 districts. By 1991 ten more will expire and by 1998 an additional nine. There are 66 districts who have a special voted tax for an indefinite period.

In 1971-72, 91.5 percent of the independent districts had a special voted tax and 45.9 percent of the county districts. Of all districts, 119, or 62.[illegible] percent had a special voted tax. In 71 districts there was no special voted tax.

Table 16 shows that most districts, 71, voted special fund taxes after the Foundation Program was financed in 1955. Only 31 voted special fund taxes before the Foundation Program was enacted and financed.

TABLE 15. Dates of Expiration of Special Voted Building Taxes - County and Independent Districts. (KRS 162.090 and KRS 160.477)

Year	Number of County	Number of Independent	Total
1973		2	2
1974			
1975	3	3	6
1976	1	1	2
1977		1	1
1978	2		2
1979	2	1	3
1980	2	4	6
1981	2		2
1982		1	1
1983	2	1	3
1984		1	1
1985			
1986			
1987	2	1	3
1988			
1989			
1990		1	1
1991	1		1
1992	1		1
1993	2	2	4
1994			
1995	1		1
1996	1		1
1997			
1998	1	1	2
Sub Total	23	20	43
Indefinite	29	37	66
TOTAL	52	57	109

TABLE 16. Date and Number of Special Voted Taxes - Special Voted General Fund, KRS 157.440, and Special Voted Building Fund, KRS 160.477.

Year	Special Voted General Fund	Special Voted Building Fund	
1950		6	
1951		4	31
1952		3	before
1953		11	MFP
1954		7	financed
1955		10	
1956		6	
1957	1	4	
1958	1	4	
1959	4	10	
1960	4	3	
1961	3	6	
1962	3	7	
1963	4	3	
1964	3		
1965	2	1	
1966	1		
1967	2	4	
1968		5	
1969	2	3	
1970		5	
1971	1		
after MFP	31	71	
TOTAL	102		

Source: Kentucky Department of Education, Statistical Information, 1972.

Table 17 shows bonded debt potential, bonded debt outstanding, available bonded potential, and potential per pupil in ADM. These potentials were derived from estimating a five percent interest rate for 20 years and assuming that $8,000 would be required annually to amortize $100,000 in bonds. The total for new bonds as of July 1, 1972 was $11,436,688 and possible new bonds was $142,763,000. The potential per pupil ranged from a high of $1,384.64 to a low of $66.16.

TABLE 17. Bonded Debt Potential, Bonded Debt Outstanding, Available Bonded Potential, and Available Per Pupil in ADM (1971-72).

District	Bonded Debt Potential	Bonded Debt Outstanding	Available Bonded Potential	Available Per Pupil in ADM
Jenkins	$ 2,750,000	$ 1,255,000	$ 1,495,000	$ 1,384.64
Beechwood	1,901,000	801,000	1,100,000	1,353.01
Nicholas	4,624,000	3,144,000	1,480,000	1,095.89
Caverna	2,568,000	1,433,000	1,135,000	1,072.37
STATE TOTALS	$611,936,000	$469,173,000	$142,763,000	$ 198.30
Bullitt	$ 6,615,000	$ 5,800,000	$ 815,000	$ 104.46
Leslie	1,917,000	1,542,000	375,000	104.12
Scottsville	581,000	531,000	50,000	93.95
Ludlow	862,000	792,000	70,000	66.16

Source: Kentucky Department of Education.

The average net interest cost for all bonds sold for public schools was 5.643 percent in 1971-72. The average net interest for state colleges and universities was 6.133 percent. For state revenue bonds for state projects, the average net interest rate was 5.4680 percent. For state obligation bonds the interest rate in 1971-72 was 3.471 percent.

Fiscal Consequences on Local Districts. In the preceding section (Table 17), data were presented concerning bonded debt potential and bond debt leeway for each district. The average bonded debt leeway was $201.81 per pupil with a range from $66.16 for Ludlow to $1,353.01 for Beechwood. The amount of debt leeway is a function of at least two variables: previous school building effort and assessed valuation.

Table 18 shows bonded debt and relative bonded debt per pupil, debt leeway, and relative debt leeway per pupil, along with relative full valuation per pupil. By an analysis of this table, indications of the effect of previous effort and assessment valuation can be seen. For example, Carroll County with $1,958.67 bonded debt per pupil had 295 percent of the state average debt per pupil of $663.23. Yet its debt leeway per pupil of $114.51 was 57 percent of the statewide average of $201.81. This relationship of outstanding debt and debt leeway was influenced by the fiscal ability of Carroll County, which in terms of full valuation per pupil, was 118 percent of the average district in the state.

In Kentucky, however, the amount of debt leeway is the result of a third variable: taxes, special voted taxes, and leeway tax. For example, Jenkins with $1,162.36 bonded debt per pupil had 175 percent of the state average per pupil of $663.23. Yet its bond debt leeway per pupil of $1,384.64 was 686 percent of the statewide average of $201.81. This relationship of outstanding debt and debt leeway was not affected by the fact that the fiscal ability of Jenkins, in terms of full valuation per pupil, was 53 percent of the average district in Kentucky, but by

TABLE 18. Bonded Debt, Debt Leeway, and Relative Full Valuation Per Pupil for Kentucky, 1971-72

District	Bonded Debt Per Pupil	Relative Bonded Debt Per Pupil	Debt Leeway Per Pupil	Relative Debt Leeway Per Pupil	Relative Full Valuation Per Pupil ADA
Adair	$ 612.38	$ 32	$ 104.97	$ 52	$ 104
Bullitt	743.37	112	104.46	52	87
Carroll	1,958.67	295	114.51	57	118
Clay	0	0	637.45	316	27
Fayette	957.17	144	105.75	52	144
Hancock	191.67	29	649.22	322	152
Jefferson	1,009.47	152	105.01	52	121
Kenton	778.14	117	105.70	52	99
Leslie	428.13	65	104.12	52	31
Livingston	215.29	324	273.09	135	105
Martin	919.80	139	104.76	52	41
McCreary	12.12	2	345.81	171	32
Nicholas	2,328.02	351	1,095.89	543	117
Beechwood	985.24	148	1,353.01	670	173
Berea	1,943.65	293	112.89	56	69
Caverna	1,353.93	204	1,072.37	531	91
Elizabethtown	2,162.81	326	109.53	54	106
Jenkins	1,162.36	175	1,384.64	686	53
Ludlow	748.51	113	66.16	33	73
Lynch	0	0	760.01	377	80

TABLE 18. (Continued)

District	Bonded Debt Per Pupil	Relative Bonded Debt Per Pupil	Debt Leeway Per Pupil	Relative Debt Leeway Per Pupil	Relative Full Valuation Per Pupil ADA
Pineville	$ 1,165.82	$ 176	$ 619.60	$ 307	$ 69
Raceland	497.74	75	105.01	52	78
Russell	623.03	94	104.75	52	104
Scottsville	990.30	149	93.95	32	130
Southgate	0	0	682.47	338	322
Walton-Verona	1,253.08	189	492.37	244	77
STATE AVERAGE	$ 663.23	$ 100	$ 201.81	$ 100	$ 100

Source: Computed from Statistical Information, Kentucky State Board of Education, 1971-72.

the fact that Jenkins had 68.1 cents above that required to participate in the Foundation Program or over 200 percent of the average district tax rate in Kentucky.

Normally, a wealthy district is able to incur much more debt than the average district. In Kentucky, the wealth of a district is a factor, but the key factor is the willingness of the people of a district to vote special voted taxes.

The leeway among school districts indicates that another factor is evident. In many cases, a district high in assessed valuation per pupil, with an above average special voted tax that has recently bonded itself substantially, has exhausted its bonding potential and ranks low on debt leeway. For example, Carroll County ranks 46th in assessed valuation per pupil, ranks 48th in the state on special voted and leeway tax, ranks 4th in bonded debt per pupil, but as a result ranks 132nd in bond debt leeway. Carroll County built a vocational school in 1968-69 at a total cost of $602,275.63 and a high school in 1967-68 at a total cost of $1,639,901.21.

Future Building Needs. Previously in this report, data indicated that pupils in Kentucky were housed in facilities grouped according to the age of the building and included the number of mobile and portable relocatable units. The age of these buildings and the number of mobile and portable relocatable classrooms should prove to be a significant factor in determining the future building needs in Kentucky.

Enrollment projections in grades one through twelve, including special education, are expected to be 756,771 in 1975-76; an increase of 2.5 percent over 1971-72. The increase will be the result of a 33 percent gain in kindergarten enrollments and nearly 100 percent growth in special education. Elementary enrollments are expected to decrease annually by 1.4 percent, secondary school enrollments will increase slightly, 1.1 percent from 1971-72 through 1975-76. Secondary school enrollments will decrease when the birth rate decline beginning in 1963 will lower enrollments.

The Division of Buildings and Grounds in the Kentucky Department of Education has estimated that the capital outlay needs as of December, 1972 was a total of $309,094,420. Of this total, $294,964,420 was for new schools, additions and renovations; $7,519,700 for administrative offices, bus garages, etc.; and $6,610,200 for sites and improvements, athletic fields and field houses, paving, sewage systems, boilers, and lighting renovations.

In 1964-65 in the study, "Beyond the Minimum,"[6] there was a backlog of building needs of $213,101,570. A backlog of building needs existed before the Foundation Program was established. This backlog has grown and continues to grow.

Table 19 shows the estimated capital outlay needs and the potential for additional bonding power. This new bond potential was $142,763,000. As of November 1972, projected capital outlay and building needs were $167,331,420. This potential for new bonds was mainly the result of the action of the 1972 General Assembly which increased the capital outlay allotment from $1,200 per classroom unit to $1,300 for the 1972-73 school year and to $1,400 for the 1973-74 school year.

TABLE 19. Kentucky Public Schools - Estimated Capital Outlay Need

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
ADAIR	$ 336,000	$ 80,000	$ -	$ 416,000	$ 300,000	$- 116,00
ALLEN	-	80,000	52,000	132,000	460,000	+ 328,000
Scottsville	50,000	80,000	10,000	140,000	50,000	- 90,000
ANDERSON	-	36,000	-	36,000	510,000	+ 474,000
BALLARD	846,000	-	20,000	866,000	200,000	- 666,000
BARREN	114,000	48,000	-	162,000	1,250,000	+ 1,088,000
Caverna	-	80,000	-	80,000	1,135,000	+ 1,055,000
Glasgow	-	100,000	-	100,000	300,000	+ 200,000
BATH	1,950,000	80,000	-	2,030,000	690,000	- 1,340,000
BELL	1,910,000	-	15,000	1,925,000	1,140,000	- 785,000
Middlesboro	-	100,000	-	100,000	300,000	+ 200,000
Pineville	510,000	-	-	510,000	380,000	- 130,000
BOONE	150,000	100,000	-	250,000	810,000	+ 560,000
Walton-Verona	450,000	-	-	450,000	400,000	- 50,000
BOURBON	1,060,000	10,700	75,000	1,145,700	315,000	- 830,000
Paris	100,000	-	-	100,000	180,000	+ 80,000
BOYD	2,240,000	-	30,000	2,270,000	940,000	- 1,330,000
Ashland	580,000	-	50,000	630,000	610,000	- 20,000
Catlettsburg	850,000	-	-	850,000	185,000	- 665,000
Fairview	70,000	-	30,000	100,000	125,000	+ 25,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
BOYLE	$ -	$ 61,000	$ -	$ 61,000	$ 250,000	$ + 189,000
Danville	1,072,000	-	33,000	1,105,000	285,000	- 820,000
BRACKEN	990,000	-	-	990,000	430,000	- 560,000
Augusta	500,000	-	-	500,000	150,000	- 350,000
BREATHITT	1,588,000	80,000	45,000	1,713,000	400,000	- 1,313,000
Jackson	46,500	80,000	-	126,500	95,000	- 31,500
BRECKINRIDGE	2,196,000	-	-	2,196,000	340,000	- 1,856,000
Cloverport	100,000	-	-	100,000	125,000	+ 25,000
BULLITT	4,945,000	-	-	4,945,000	815,000	- 4,130,000
BUTLER	175,000	15,000	30,000	220,000	255,000	+ 35,000
CALDWELL	328,000	-	20,000	348,000	970,000	+ 622,000
CALLOWAY	2,780,000	-	80,000	2,860,000	890,000	- 1,970,000
Murray	63,000	-	10,000	73,000	215,000	+ 142,000
CAMPBELL	2,461,500	100,000	-	2,561,500	540,000	- 2,021,000
Bellevue	300,000	-	-	300,000	725,000	+ 425,000
Dayton	50,000	-	200,000	250,000	620,000	+ 370,000
Ft. Thomas	1,540,000	-	64,000	1,604,000	670,000	- 934,000
Silver Grove	100,000	-	-	100,000	55,000	- 45,000
Southgate	100,000	-	-	100,000	95,000	- 5,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
CARLISLE	$ 976,500	$ 76,000	$ -	$ 1,052,500	$ 260,000	$ - 792,500
CARROLL	241,500	112,000	-	353,500	220,000	- 133,000
CARTER	3,126,800	160,000	20,000	3,306,800	540,000	- 2,766,800
CASEY	562,000	-	100,000	662,000	580,000	- 82,000
CHRISTIAN	7,500,000	-	101,000	7,601,000	1,180,000	- 6,421,000
CLARK	3,120,000	-	-	3,120,000	620,000	- 2,500,000
CLAY	1,752,500	48,000	-	1,800,500	3,570,000	+ 1,770,000
CLINTON	-	80,000	-	80,000	215,000	+ 135,000
CRITTENDEN	2,857,500	36,000	-	2,893,500	670,000	- 2,223,500
CUMBERLAND	200,000	74,000	-	274,000	175,000	- 99,000
DAVIESS	3,583,500	72,000	-	3,655,500	1,025,000	- 2,630,500
Owensboro	2,905,000	-	-	2,905,000	850,000	- 2,055,000
EDMONSON	1,925,000	86,000	-	2,011,000	740,000	- 1,271,000
ELLIOTT	775,000	-	15,000	790,000	395,000	- 395,000
ESTILL	140,000	36,000	15,000	191,000	330,000	+ 139,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
FAYETTE	$16,108,640	$ 370,000	$ -	$16,478,640	$ 3,765,000	$ -12,713,640
FLEMING	1,095,000	116,000	-	1,211,000	960,000	- 251,000
FLOYD	8,875,000	-	338,000	9,213,000	3,310,000	- 5,903,000
FRANKLIN	5,307,500	148,000	50,000	5,505,500	645,000	- 4,860,500
Frankford	535,000	-	-	535,000	310,000	- 225,000
FULTON	825,000	-	21,000	846,000	340,000	- 506,000
Fulton	50,000	-	15,000	65,000	325,000	+ 260,000
GALLATIN	266,000	50,000	2,000	318,000	330,000	+ 12,000
GARRARD	1,070,000	116,000	-	1,186,000	230,000	- 956,000
GRANT	975,000	-	-	975,000	225,000	- 750,000
Williamstown	680,000	60,000	8,000	748,000	55,000	- 693,000
GRAVES	3,603,500	-	7,000	3,700,500	1,520,000	- 2,180,500
Mayfield	462,500	-	-	462,500	600,000	+ 137,500
GRAYSON	3,642,000	-	10,800	3,652,800	1,060,000	- 2,592,800
GREEN	-	116,000	18,000	134,000	1,150,000	+ 1,016,000
GREENUP	-	36,000	-	36,000	990,000	+ 954,000
Raceland	135,000	-	-	135,000	100,000	- 35,000
Russell	-	116,000	27,000	143,000	345,000	+ 202,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
HANCOCK	$ 175,000	$ 46,000	$ -	$ 221,000	$ 945,000	$ + 724,000
HARDIN	2,880,000	-	-	2,880,000	1,155,000	- 1,725,000
Elizabethtown	126,000	-	15,000	141,000	280,000	+ 139,000
West Point	37,500	-	-	37,500	315,000	+ 277,500
HARLAN	2,336,700	-	-	2,336,700	2,075,000	- 261,700
Harlan	1,535,000	-	7,000	1,542,000	490,000	- 1,052,000
Lynch	100,000	-	-	100,000	355,000	+ 255,000
HARRISON	615,000	12,000	25,000	652,000	400,000	- 252,000
HART	100,000	-	-	100,000	305,000	+ 205,000
HENDERSON	1,158,000	-	79,000	1,237,000	1,950,000	+ 713,000
Henderson	1,651,000	-	75,000	1,726,000	1,065,000	- 661,000
HENRY	1,200,000	-	-	1,200,000	205,000	- 995,000
Eminence	30,000	-	-	30,000	55,000	+ 25,000
HICKMAN	1,710,000	80,000	-	1,790,000	465,000	- 1,325,000
HOPKINS	4,553,360	-	-	4,553,360	880,000	- 3,673,360
Dawson Springs	-	80,000	60,000	140,000	60,000	- 80,000
Earlington	215,000	80,000	-	295,000	145,000	- 150,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
JACKSON	$ -	$ 36,000	$ -	$ 36,000	$ 845,000	$ + 809,000
JEFFERSON	31,078,000	1,350,000	700,000	33,128,000	10,000,000	-23,128,000
Anchorage	40,000	-	14,000	54,000	165,000	+ 111,000
Louisville	31,650,000	-	2,712,000	34,362,000	5,440,000	-28,922,000
JESSAMINE	176,000	-	-	176,000	405,000	+ 229,000
JOHNSON	1,100,000	-	-	1,100,000	380,000	- 720,000
Paintsville	148,000	-	-	148,000	120,000	- 28,000
KENTON	500,000	-	-	500,000	1,100,000	+ 600,000
Beechwood	145,000	-	-	145,000	955,000	+ 810,000
Covington	2,225,000	-	-	2,225,000	2,490,000	+ 265,000
Erlanger	30,000	-	-	30,000	1,415,000	+ 1,385,000
Ludlow	100,000	-	-	100,000	70,000	- 30,000
KNOTT	80,000	-	-	80,000	1,385,000	+ 1,305,000
KNOX	825,000	36,000	-	861,000	1,435,000	+ 574,000
Barbourville	269,500	-	-	269,500	60,000	- 209,500
LARUE	1,250,000	125,000	-	1,375,000	700,000	- 675,000
LAUREL	3,443,000	-	-	3,443,000	770,000	- 2,673,000
East Bernstadt	50,000	-	20,000	70,000	130,000	+ 60,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
LAWRENCE	$ 2,300,000	$ 80,000	$ 240,000	$ 2,620,000	$ 765,000	$ - 1,855,000
LEE	120,000	36,000	100,000	256,000	680,000	+ 424,000
LESLIE	630,000	116,000	-	746,000	375,000	- 371,000
LETCHER	4,780,000	-	-	4,780,000	1,775,000	- 3,005,000
Jenkins	100,000	-	-	100,000	1,495,000	+ 1,395,000
LEWIS	287,000	70,000	-	357,000	520,000	+ 163,000
LINCOLN	1,915,000	-	23,000	1,938,000	1,385,000	- 553,000
LIVINGSTON	110,000	36,000	-	146,000	430,000	+ 284,000
LOGAN	2,770,000	136,000	30,000	2,936,000	1,520,000	- 1,416,000
Russellville	680,000	-	25,0000	705,000	195,000	- 510,000
LYON	117,400	-	-	117,400	440,000	+ 322,600
MADISON	2,400,000	-	-	2,400,000	815,000	- 1,585,000
Berea	750,000	-	-	750,000	115,000	- 635,000
Richmond	205,000	-	-	205,000	265,000	+ 60,000
MAGOFFIN	2,791,000	111,000	-	2,902,000	825,000	- 2,077,000
MARION	2,925,400	-	125,500	3,050,900	470,000	- 2,580,900
MARSHALL	1,240,000	-	-	1,240,000	885,000	- 355,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
MARTIN	$ 1,200,000	$ -	$ -	$ 1,200,000	$ 305,000	$ - 895,000
MASON	1,146,000	80,000	12,000	1,238,000	565,000	- 673,000
Maysville	1,115,000	-	-	1,115,000	430,000	- 685,000
McCRACKEN	3,260,000	-	-	3,260,000	2,970,000	- 290,000
Paducah	1,778,000	-	185,000	1,963,000	1,005,000	- 958,000
McCREARY	1,600,000	-	-	1,600,000	1,170,000	- 430,000
McLEAN	180,000	104,000	24,000	308,000	835,000	+ 527,000
MEADE	2,270,000	-	-	2,270,000	380,000	- 1,890,000
MENIFEE	176,000	-	18,000	194,000	280,000	+ 86,000
MERCER	1,457,400	80,000	6,000	1,543,400	295,000	- 1,248,000
Burgin	100,000	-	-	100,000	50,000	- 50,000
Harrodsburg	425,000	-	-	425,000	150,000	- 275,000
METCALFE	290,900	-	59,000	349,900	205,000	- 144,000
MONROE	-	116,000	-	116,000	460,000	+ 344,000
MONTGOMERY	-	-	24,000	24,000	1,425,000	+ 1,401,000
Mt. Sterling	292,500	-	-	292,500	320,000	+ 27,500
MORGAN	850,000	-	-	850,000	1,195,000	+ 345,000

TABLE 19, (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
MUHLENBERG	$ 2,966,400	$ 48,000	$ -	$ 3,014,400	$ 1,290,000	$ - 1,724,000
Central City	134,000	60,000	-	194,000	570,000	+ 376,000
Greenville	1,080,000	100,000	-	1,180,000	285,000	- 895,000
NELSON	30,000	80,000	-	110,000	455,000	+ 345,000
Bardstown	850,000	-	-	850,000	190,000	- 660,000
NICHOLAS	680,000	24,000	6,000	710,000	1,480,000	+ 770,000
OHIO	100,000	-	-	100,000	1,145,000	+ 1,045,000
OLDHAM	100,000	-	-	100,000	380,000	+ 280,000
OWEN	-	116,000	-	116,000	190,000	+ 74,000
OWSLEY	891,800	-	-	891,800	120,000	- 771,000
PENDLETON	-	80,000	-	80,000	650,000	+ 570,000
PERRY	3,934,800	128,000	100,000	4,162,800	1,920,000	- 2,242,800
Hazard	1,750,000	-	-	1,750,000	270,000	- 1,480,000
PIKE	5,053,000	48,000	-	5,101,000	2,753,000	- 2,348,000
Pikeville	1,900,000	100,000	-	2,000,000	580,000	- 1,420,000
POWELL	1,213,920	-	-	1,213,920	230,000	- 983,920
PULASKI	3,226,000	-	62,000	3,298,000	1,900,000	- 1,398,000
Science Hill	92,000	-	50,000	142,000	95,000	- 47,000
Somerset	100,000	-	-	100,000	260,000	+ 160,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
ROBERTSON	$ 255,000	$ 5,000	$ -	$ 260,000	$ 185,000	$ - 75,000
ROCKCASTLE	1,975,000	-	-	1,975,000	1,840,000	- 135,000
ROWAN	2,434,000	116,000	19,000	2,569,000	290,000	- 2,279,000
RUSSELL	1,692,000	40,000	22,000	1,754,000	845,000	- 909,000
SCOTT	510,000	-	10,000	520,000	330,000	- 90,000
Georgetown	-	100,000	-	100,000	105,000	+ 5,000
SHELBY	2,290,000	36,000	-	2,326,000	1,060,000	- 1,266,000
Shelbyville	65,000	-	-	65,000	490,000	+ 435,000
SIMPSON	1,568,000	-	-	1,568,000	695,000	- 873,000
SPENCER	-	136,000	-	136,000	450,000	+ 314,000
TAYLOR	50,000	36,000	-	86,000	585,000	+ 499,000
Campbellsville	706,000	80,000	-	786,000	185,000	- 601,000
TODD	1,100,000	-	-	1,100,000	910,000	- 190,000
TRIGG	100,000	-	-	100,000	755,000	+ 655,000
TRIMBLE	1,795,000	104,000	28,000	1,927,000	135,000	- 1,702,000
UNION	252,400	10,000	-	262,400	1,290,000	+ 1,028,000

TABLE 19. (Continued)

District	1	2	3	Total	New Bond Potential	Need/Potential Positive or Negative
WARREN	$ 5,444,000	$ 48,000	$ -	$ 5,492,000	$ 710,000	$ - 4,782,000
Bowling Green	161,000	-	-	161,000	615,000	+ 454,000
WASHINGTON	1,785,000	36,000	-	1,821,000	290,000	- 1,531,000
WAYNE	175,000	36,000	19,000	230,000	730,000	+ 500,000
Monticello	80,000	-	-	80,000	255,000	+ 175,000
WEBSTER	1,128,000	24,000	20,000	1,172,000	700,000	- 472,000
Providence	-	80,000	25,000	105,000	370,000	+ 265,000
WHITLEY	2,130,000	-	-	2,130,000	1,350,000	- 780,000
Borbin	305,000	-	-	305,000	400,000	+ 95,000
Williamsburg	112,000	-	15,000	127,000	250,000	+ 123,000
WOLFE	1,362,500	-	134,000	1,496,500	185,000	- 1,311,500
WOODFORD	4,387,500	-	-	4,387,500	380,000	- 4,007,500
TOTALS	294,964,420	7,519,700	6,610,300	309,094,420	142,763,000	+32,477,100 -110,285,900

KEY: 1. New elementary schools, middle schools, junior high schools, senior high schools. Additions to the above. Renovation.

2. Administrative offices, bus garages, etc.

3. Sites and improvements - Athletic fields and field houses - Paving, etc. - Sewage systems, boilers, etc. - Relighting.

Table 19 also shows that 23 school districts had no need for new elementary or secondary schools, or additions or renovations for their elementary and secondary schools. There were 74 districts with surplus funds after their capital outlay needs were met. However, 116 districts still had capital outlay needs after all bonding potential had been exhausted.

Three school districts have 27.1 percent of the total capital outlay needs in Kentucky. These rank in the top 20 percent of all districts in assessed valuation per child and have special voted taxes.

The range of surplus for building needs was from $5,000 to $1,770,000. The range of deficits in building needs was $5,000 to $28,128,000.

The total for all 74 districts with surplus funds, after all capital outlay needs are met was $32,477,100. The amount of capital outlay needs for 116 districts, after they have exhausted all capital outlay funds was $110,285,900.

Evaluation of Kentucky Program for Capital Outlay and Building Improvements

In some instances, Kentucky has succeeded in providing adequate facilities since 1955. The construction formulas currently in use to determine space and facilities for new school construction are reasonably adequate. The practice of permitting local districts flexibility in space arrangements to meet local educational needs and programs has merit. However, the Kentucky school construction program has failed to place pupils in adequate housing, for 40.8 percent of the schools are over 25 years old and 10 percent are over 50 years old. In addition, Kentucky schools are using 1,034 portable, mobile, and relocatable units.

Equalization. The Foundation Programs' capital outlay allotment provides some equalization in terms of equalizing the ability of local districts for school buildings.

There are some problems with equalization. These are:

1. There is a wide disparity among districts in their existing leeway tax and special voted taxes for capital outlay.

2. Some districts with increasing enrollments, even with relatively high special voted additional taxes, find themselves with little means to finance needed new projects.

3. Some districts with decreasing enrollments have very limited building needs and show relatively high balances in their capital outlay and school building funds.

4. Because of increased demands in other categories of the Foundation Program, many school districts with special voted taxes are transferring capital outlay monies to the general fund. Many of these show significant needs for school buildings.

5. Approximately 46 percent of Kentucky school districts depend entirely on the Foundation Program allotment for school construction, while 53.7 percent have made an additional effort for school building by voting a special voted building tax.

6. Since 1966, almost 60 percent of the tax referendums failed to win approval. This reflects the taxpayers' revolt against additional local effort for school construction.

Major Conclusions

Several conclusions were given in the previous sections in describing the status of capital outlay financing in Kentucky. Major conclusions will be presented prior to stating the recommendations for improving Kentucky's system of financing school capital outlay.

1. Overview. Although the Kentucky Foundation Program finances a majority of the cost of instruction, transportation, and other current expenses; a majority of the cost of capital outlay is financed by the local school districts. Of all facilities, 685 or 40.8 percent were over 25 years older; 168.5 school buildings, or over 10 percent were over 50 years old. The Kentucky Foundation Program, even with significant local effort, has not erased the backlog of school building needs. Kentucky school districts have built 13,559 classrooms from 1960 to 1971. This has been accomplished in some part by the Foundation Program, but a more significant part has been accomplished by local special voted taxes.

2. State and Local Shares for Capital Outlay. In the 1970-71 fiscal year the state's share of the Minimum Foundation Program was 79.2 percent and the local share was 20.8 percent. However, in the same year the state's share of the Capital Outlay and School Building Funds was 36.9 percent and the local share was 63.1 percent.

In the 1970-71 fiscal year, local school districts were supplementing their Capital Outlay and School Building Funds with $23,189,709.60 from Special Voted Taxes. This amount was 62 percent of the total Minimum Foundation Program allotment of $37,062,000.

3. Inequality of Effort Among Kentucky School Districts. In 1971-72, 119, or 62.7 percent of the districts had special voted taxes. In 71 or 37.3 percent of the districts, there were no special voted taxes.

In 1971-72 the total tax rate ranged from 27.3 cents to 157.2 cents. The highest rate was 5.75 times the lowest rate. Moreover, there was an inequality of effort above that required for participation in the Minimum Foundation Program. The range was from 128.4 cents to .2 cents above the required local effort.

In 1971-72 the percent of bonded debt potential to the total assessment in Kentucky school districts ranged from .68 percent to 15.68 percent, a range of over 20 to 1. The effort among Kentucky school districts was unequal.

4. Building Needs. As of December, 1972, school building needs were $167,331,420. In 74 districts there were surpluses in their capital outlay and school building funds after all the needs were met. After exhausting all present funds, 111 districts had $110,205,000 in building needs. Three school districts have 27.1 percent of the total of the building needs in Kentucky.

The backlog of building needs in Kentucky long existed before the Minimum Foundation Program was funded in 1955. This backlog of building needs is one of the top priorities of needed change in the method of financing a public elementary and secondary education program.

5. Enrollment. Enrollment projections in grades one through twelve, including special education, are expected to be 756,771 in 1975-76; an increase of 2.5 percent over 1971-72. The increase will be the result of a

33 percent gain in kindergarten enrollments and nearly 100 percent growth in special education. Elementary enrollments are expected to decrease annually by 1.4 percent, secondary school enrollments will increase slightly, 1.1 percent from 1971-72. Eighty-seven (87) districts had increasing enrollments, sixty-four (64) districts had decreasing enrollments, and forty-one (41) districts had stabilizing enrollments. The biggest gain was 95.8 percent. The largest decrease was 19.8 percent.

6. Balances in Capital Outlay and School Building Accounts. In the 1967-68 fiscal year the balance in the Capital Outlay and School Building Fund was $10,854,374.89. In the 1970-71 fiscal year the balance had increased to $26,781,220.39. The balances in the funds of the districts ranged from 0 dollars to $596,510.61.

Increasing balances may indicate that school districts are planning to finance capital outlay on a pay-as-you-go basis. However, the data also indicate that some school districts have approached adequacy of school building need for current and projected enrollments. The present formula needs some changes. Allocations need to go where the needs are.

7. The Amount of Capital Outlay Funds Transferred to the General Fund. In the fiscal year 1971-72, $13,242,618 or 35.3 percent of the Capital Outlay Allotment was transferred to the General Fund by Kentucky school districts.

In the fiscal year 1971-72, $7,038,010.70 or 10.3 percent of the total for capital outlay and debt services came from general fund monies.

This practice indicates that the needs of Kentucky School Districts require examination and possible change in the distribution formulas.

8. Bond Interest Cost for Public Schools in Kentucky. In the fiscal year 1971-72, the average net interest cost for all revenue bonds was 5.648 percent. The average net interest costs for revenue bond sales under 15 years was 5.138 percent. The average net interest costs for revenue bonds over 25 years was 5.823 percent.

Revenue bonds sold by the Kentucky State Property and Building Commission for educational television, buildings, voting machines, parks, area vocational schools, and airports, for the year 1972-73 for a 29 year issue, were sold for an average net interest cost of 5.468 percent.

In the 1967-68 fiscal year, the average net interest cost for revenue bonds sold by Kentucky school districts was 4.322 percent. For the same year the average net interest cost for revenue bonds sold by the Kentucky Property and Building Commission was 4.988 percent.

In the fiscal year 1971-72, the average net interest rate for general obligation bonds sold by the Kentucky State Property and Building Commission was 3.471 percent.

The average interest rates for revenue bonds were lower for state agency bonds than were the average net interest rates for revenue bonds for local school districts.

9. Increased Costs for School Building Construction. For the five year period, 1967-72 school building construction costs for elementary schools increased from $18.32 per square foot to $22.67 per square foot or 23.74 percent. The cost per pupil increased from $1,253.06 to $1,718.87 or 37.1 percent. The cost per classroom unit increased from $33,832.66 to $46,409.49 or 37.1 percent.

For the five year period, 1967-72, school building construction costs for secondary schools increased from $17.68 per square foot to $19.95 per square foot or a 12.8 percent increase. The cost per pupil increased from $2,047.00 to $2,344.83 or 14.5 percent. The cost per classroom unit increased from $55,269.00 to $63,310.41 or 14.5 percent.

For the four year period, 1968-72, school building construction costs for vocational schools increased from $17.81 per square foot to $24.05 or 35 percent. The cost per pupil increased from $2,978.56 to $6,268.22 or 110.4 percent. The cost per classroom unit increased from $44,678.40 to $94,023.30 or 110.4 percent.

Increased school construction costs indicate the need for considering periodic increases in the amount of funds for this category.

Recommendations

The report of the National Capital Outlay Study, a component of the National Educational Finance Project, contained several model programs for funding school construction. The geography, the economic level, the legal provisions for financing capital outlay and debt services, lead to the conclusion that Kentucky can build on its present system and comply with any court decision requiring a more equitable distribution of funds. The following recommendations are presented:

1. The $1,400 classroom unit allocation should be changed to reflect a pupil-cost-unit approach for allocating funds. The value of the pupil-cost-unit allocation for capital outlay would be computed by dividing the appropriation by the number of pupil-cost-units for the state.

2. The General Assembly should establish the Kentucky State School Building Authority under the control of the State Board of Education. The State Superintendent of Public Instruction would serve as the executive officer of the Authority. The purpose of the Authority would be to provide school construction funds for local school districts with a high incidence of need for facilities. The following operational procedures are proposed for the Authority.

a. The legislative appropriation for the fund should be $6,000,000.00.

b. All requests for funds should be forwarded to the State Department of Education for review and approval.

c. Funds from the Kentucky State Building Authority should be made available only to local school districts that have met minimum standards of organization and administration for efficient and effective utilization of school facilities. In the allocation of funds from the Authority the following factors should be taken into consideration.

(1) Number of students in facilities being used beyond their capacity

(2) Number of students in temporary facilities

(3) Number of students in educationally obsolete facilities

(4) Age and condition of school facilities

(5) Relationship between the condition and internal features of the facilities and state approved instructional programs

d. Local school districts should develop and submit plans for construction projects to the State Department of Education for review and approval. Upon approval by the state, funds should be advanced to the local districts for site purchase and architectural engineering fees. Additional funds should be allocated during the course of the project in accordance with the construction schedule.

FOUNDATION PROGRAM TRANSPORTATION STUDY*

The last major study of the Kentucky Foundation Program was conducted in 1966. The report Beyond the Minimum was published in January of 1967. Since that time, five years have elapsed and many changes have taken place in education during that period. These changes have had a profound effect on the factors that influence educational finance.

States throughout the nation are in the process of evaluating educational finance plans. The study conducted by the National Educational Finance Project, the Serrano decision and expanding education needs are some of the factors that have given rise to numerous questions and re-evaluation of present educational finance problems.

In 1972, after a year of preliminary studies, the Kentucky State Department of Education instituted a study to upgrade and evaluate the Kentucky Foundation Program in regard to current needs. The study was divided into ten areas:

Study No. 1	Parameters of Educational Need, Programs and Costs
Study No. 2	Staffing and Salaries
Study No. 3	Financing Capital Outlay
Study No. 4	Financing Transportation
Study No. 5	Cost of Delivering Education
Study No. 6	Extended School Year
Study No. 7	School District Organization
Study No. 8	School District Productivity
Study No. 9	Financing School Lunch
Study No. 10	State and Local Taxation to Support Education

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*This substudy was researched and written by Dr. Gene C. Farley, Western Kentucky University, Dr. M. D. Alexander, Virginia Polytechnic Institute and State University, and Gayle B. Bowen, Research Fellow, National Educational Finance Project.

This paper consists of the component dealing with financing transportation. This is but one component of a comprehensive study being conducted by consultants, school personnel and lay citizens.

Statement of Problem and Methodology

The purpose of this paper was to study the transportation portion of the Kentucky Foundation Program. This study was primarily concerned with the analysis of all aspects of the transportation formula. The analysis was to identify strengths and weaknesses which facilitate or impede the transportation of Kentucky school children to and from school and make recommendations which alleviate or upgrade any negative factors that were ascertained.

To accomplish the aforementioned purposes, a multi-step approach was used. The steps were as follows:

1. A thorough review of current school transportation literature.
2. Survey of all state transportation programs by questionnaire.
3. Survey of transportation problems of local school superintendents in Kentucky through questionnaires.
4. Ascertain problems perceived through state advisory committee.
5. Collection of data concerning Kentucky transportation through meetings with State Department of Education personnel and local school superintendents.
6. Collection of data from official State Department of Education records.

7. Analyzing all data collected through surveys, meetings, records, personal observation, etc. to ascertain strengths and weaknesses of Kentucky Foundation Program transportation formula.
8. Submission of preliminary findings to advisory committee and transportation experts for review.

A thorough review of all professional literature was made to obtain information which might be of assistance in analyzing and comparing the Kentucky Foundation Program transportation to current thinking in the field.

Steps two and three were conducted to obtain current data dealing with transportation both inter- and intra-state. The questionnaires are in Appendix A and B. This method was quite useful in comparing Kentucky's program with other states and then viewing Kentucky's program primarily from the point of view of local school superintendents who have to "live" with the program.

Steps four, five, and six were extremely helpful in obtaining data not only from lay citizens on how they perceive the transportation system and its problem but, also, from experts in the field of transportation from the State Department of Education.

Steps seven and eight plus the final draft culminates the report. These were the steps in which all data were thoroughly reviewed and analyzed with the purpose of upgrading the present program.

Transportation Background

On August 1, 1869, the General Court of Massachusetts authorized the transportation of pupils to and from public schools at public expense. This historical law stated:

> Any town in the commonwealth may raise by taxation or otherwise appropriate money to be expended by the school committee in their discretion, in providing for the conveyance of pupils to and from public schools.

This act made pupil transportation an integral part of the community tax structure.[1] Between 1874 and 1880, Massachusetts towns started taking advantage of the transportation law to close small schools, and transport pupils to and from central schools. Opposition arose as some critics objected to the expenses involved, doubted that pupils could be transported safely and comfortably, feared that chores at home could not be performed because of time and distance traveled, and believed that the malleable minds of children would suffer from bad influences that were present across township lines.

Some leaders saw that transportation would help equalize the educational opportunities of city and rural children. One leader stated:

> The health of the children is noticeably better, especially as regards colds, because when conveyed in wagons and landed dry and warm, they are saved from sitting all day with wet feet and draggled clothing--a result of having to tramp through all kinds of weather.

The horse drawn wagon was the vehicle most often used for pupil transportation from 1869-1920. These wagons sometimes called "kid hack" varied from the plantation wagon to the "school wagon" actually manufactured for the purpose of transporting pupils. The first school wagons for pupil transportation were probably manufactured in the 1880's in Richmond, Indiana. The price of these wagons ranged from $80 to $175 each.

As early as 1909, West Norristown, Pennsylvania, used a "motor bus" for transporting pupils. Basically, pupil transportation evolved as a response to the problem of meeting the educational needs of students. Also, as educational demands became greater, schools became larger and necessitated greater traveling distances for students.[2]

Kentucky Background

The Kentucky General Assembly passed the Sullivan Bill in 1908, which provided for a complete reorganization of the school system and for the establishment in two years of a high school in every county in Kentucky. It provided for consolidation of schools without transportation.[3]

Following the enactment of the Sullivan Bill in 1908, the McCracken County Board of Education attempted to consolidate some of the county schools and provide transportation. The Circuit Judge of McCracken County issued a restraining order preventing consolidation and questioning the legality of paying for the transportation of pupils to school. The Kentucky Court of Appeals subsequently upheld the McCracken Board of Education and allowed both consolidation and transportation.[4]

A state survey of December, 1909, discloses that three schools in Kentucky provided pupil transportation.[5] In a report to the Superintendent of Public Instruction at the close of the school year 1910-11, the

Superintendent of Mason County Schools stated that he had consolidated two school districts and transported the pupils in a large wagon the previous year. This year he had consolidated six districts into a new $32,000 building and transported the children in six large wagons drawn by two horses each.[6] Thus, Kentucky had its beginning of pupil transportation. In 1913, Mason County's transportation system had replaced the ordinary wagon with passenger coaches in which the children sat facing each other.[7]

The early advocates of transportation faced opposition because of poor roads, length of the route, and time spent on the road, although the average length of a route in the United States was four miles.[8]

Most school districts owned the wagons used in transporting pupils and contracted the teams and drivers at a price range of $25 to $40. No pupil was required to walk more than one-half mile to catch the wagon which was often driven by older boys in high school.[9] Each district provided a list of rules and regulations pertaining to pupil conduct, safety requirements for the teacher, driver, wagon, as well as a time schedule.

The greatest impetus to school transportation in Kentucky and throughout the United States was provided by the internal combustion engine. The first automotive buses were used in Kentucky during World War I -- around 1915. By 1921, forty-seven schools located in sixteen counties provided free transportation using 62 motor buses and 33 large horse-drawn coaches.[10] In 1925, 39 counties were providing free transportation for

7,500 pupils daily in 142 motor buses and 67 horse drawn vehicles. By 1939, horse-drawn equipment was fastly fading from the scene. The cost per pupil per day for horse-drawn vehicles was 19 cents as compared to 11 cents for the motor driven buses. In 1947-48 all counties provided free transportation. The General Assembly passed a law in 1954 charging the Commonwealth with the responsibility of sharing with the local district the cost of pupil transportation. This law allowed one transportation unit of $1,600 for each 80 pupils who lived a mile or more from school. By 1958-59, a large percentage of pupils in every district were being transported. The law was revised in 1960 to include pupil density and cost per pupil as a primary factor in determining the amount of state allocations.

From one-horse vehicles in 1908 to 4,016 school buses in 1960, Kentucky's pupil transportation system had "come of age."[11] Table 1 shows the growth of the transportation in Kentucky.

Kentucky Transportation Formula

With the change of the transportation formula by the 1960 General Assembly the philosophy of density or sparsity became effective. Factors such as terrain, road conditions, and others were compensated for by either the density factor, the cost factor, or both. The following Table 2 illustrates the method currently used to compensate local school districts taking both density and cost factors.

TABLE 1. Kentucky Transportation Date 1926-27 to 1970-71

	Buses			
Year	Motor	Horse Drawn	Pupils Transported	Cost
1926-27	186	75	9,500	$
1929-30			14,487	282,502.00
1936-37	1,308	75	74,867	994,028.00
1937-38	1,466	87	86,147	1,134,646.00
1938-39	1,530	75	89,411	1,251,972.00
1939-40	1,612	61	101,317	1,359,685.00
1946-47	1,809	16	137,514	2,903,516.00
1947-48	1,990	13	154,272	3,163,742.00
1948-49	2,151	13	168,162	3,702,125.00
1949-50	2,323	10	187,616	3,986,580.00
1956-57	3,763	00	288,737	8,451,672.00
1957-58	3,865	00	301,520	8,652,011.00 a
1958-59	4,016	00	319,847	9,271,844.00
1965-66	4,830		388,641	13,234,636.98
1966-67	4,881		393,940	12,178,096.38
1967-68	5,099		407,780	14,912,866.62
1968-69	5,116 c*		413,717 e	16,732,379.14 b
1969-70			420,287 e	18,797,742.44
1970-71			431,234	19,979,206.79 d

a. Vickers, John L. Fifty Years of Pupil Transportation in Kentucky, Division of Pupil Transportation, Department of Education, Frankfort, Kentucky.

b. 1960-68 Biennal Report, Kentucky Department of Education.

c. 1967-69 Biennal Report, Kentucky Department of Education. (*This includes all motor vehicles; school owned buses, private buses, plus station wagons, etc.)

d. 1969-71 Biennal Report, Kentucky Department of Education.

e. Summary of Kentucky Education Statistics, Kentucky Department of Education.

TABLE 2. Example of Calculation of the Foundation Program

District X Calculations		
A	Net Square Miles Not Primarily Served Net Square Miles	393 12.6 380.4
B	Gross ADA Transported Pupils Not Included in ADA Net ADA	2,373.2 229.7 2,143.5
C	Density Pupils Per Square Miles	5.6
D	Total Cost of Program	$ 124,540.00
E	Cost Per Pupil	52.48
F	Actual Cost Per Pupil Per Day	.308
G-H-I	Graph Adjusted Cost	.309
J	Aggregate Days	364,395.00
K	Adjusted Cost of Program	$ 112,598.00

A. Net Square Miles. The primary area is determined by taking the total square miles in a district and subtracting the square miles not primarily served. The area not primarily served is computed as more than one mile distant from a school bus route. For example -- a district has 393 square miles with 12.6 square miles not primarily served (measured with the polar planimeter); therefore, 393.0 - 12.6 would yield 380.4 used for Foundation Program Calculation.

B. ADA Transported. The Gross Average Daily Attendance transported by the district has to be determined first. From the Gross ADA you subtract those pupils not included in the Foundation Program, such as, those pupils: (1) transported less than a mile; (2) transported to non-public schools; (3) over-age or non-contract pupils. For example -- a district's Gross ADA transported is 2,373.2, those transported less than a mile--109.7; those non-public students--100; over-age or non-contract pupils--20.

2,373.2 - (109.7 + 100 + 20) = 2,143.5 Net ADA Transported

C. Density Pupils Per Square Miles. The density of pupils per square mile is determined by dividing the Net ADA transported by the Net Square Miles primarily served in the district. For example -- if School System X had a Net ADA of 2,143.5 transported pupils and System X had a net area of 380.4 square miles, a density of 5.6 pupils per square mile would result. (Table 3).

D. Total Cost of Program. The total cost of the program is obtained by taking the gross amount spent on transportation and subtracting the amount (1) reimbursed by federal funds, (2) reimbursed from bus rental and (3) spent this year for bus replacement. For example, if School System X spends $133,338 on total transportation and has $2,577 reimbursed from federal funds, $397 for bus rental, $25,000 for this year's bus replacement, the formula would be $133,338 - ($2,577 + 397 + 25,000) = $105,364. This amount is then added to the amount of depreciation of district owned buses to obtain the district's Total Basic Foundation Cost for Transportation.

TABLE 3. Density Factors for Districts Used to Calculate Transportation Cost

County Districts					
Group 1		Group 2		Group 3	
County	Density	County	Density	County	Density
Robertson	3.0	Henry	4.8	Monroe	5.6
Crittenden	3.4	Bracken	4.9	Hancock	5.7
Cumberland	3.4	Elliott	5.0	Ballard	5.7
Livingston	3.7	Trigg	5.1	Calloway	5.7
Caldwell	3.8	Metcalfe	5.1	Owsley	5.7
Lyon	3.9	Allen	5.1	Morgan	5.7
Hickman	3.9	Ohio	5.1	Wayne	5.9
Owen	4.0	Washington	5.2	Grant	6.0
Butler	4.0	Garrard	5.2	Casey	6.0
Carlisle	4.1	Hart	5.2	Adair	6.0
Todd	4.4	Fleming	5.3	Barren	6.0
Lawrence	4.4	Green	5.3	Wolfe	6.1
Grayson	4.5	Spencer	5.3	Gallatin	6.1
Breckinridge	4.5	Lewis	5.5	Graves	6.1
Logan	4.6			Bath	6.2
Webster	4.6			Pendleton	6.3
Nicholas	4.6			Anderson	6.3
Menifee	4.7			Shelby	6.4
McLean	4.7			Union	6.5
				Mercer	6.5
				Bourbon	6.5
				Edmonson	6.5
				Trimble	6.5
				Rowan	6.6
				Larue	6.8
				Jackson	6.9

TABLE 3 (Continued)

County Districts

Group 4		Group 5		Group 6	
County	Density	County	Density	County	Density
Fulton	7.0	Russell	8.4	Johnson	10.7
Clinton	7.1	Mason	8.5	Henderson	11.1
Taylor	7.3	Harrison	8.6	Knox	11.4
Rockcastle	7.3	Powell	8.7	Woodford	11.6
Christian	7.3	Warren	8.8	Knott	11.8
Lee	7.6	Carter	8.8	Clark	12.4
Magoffin	7.7	Boyle	8.8	Jessamine	12.7
Whitley	7.8	Marion	9.0	Oldham	12.8
Hopkins	7.8	Carroll	9.9		
Pulaski	8.0	Madison	10.0		
Breathitt	8.0	Greenup	10.0		
Muhlenberg	8.0	Clay	10.1		
Meade	8.0	Montgomery	10.6		
Nelson	8.2				
Estill	8.3				
Simpson	8.3				
Leslie	8.3				
McCreary	8.3				
Scott	8.3				
Lincoln	8.3				

Group 7		Group 8		Group 9	
County	Density	County	Density	County	Density
Hardin	12.9	Floyd	17.6	Kenton	48.3
Bell	13.1	Franklin	17.9	Fayette	57.9
Martin	13.5	McCracken	18.1		
Perry	13.8	Boyd	20.3		
Laurel	14.0	Bullitt	20.9		
Letcher	14.0	Boone	23.1		
Daviess	14.4	Campbell	27.8		
Harlan	14.4				
Pike	16.9				

Group 10	
County	Density
Jefferson	145.3

TABLE 3. (Continued)

Independent School Districts

Group 1

District	Density
Earlington	5.3

Group 2

District	Density
Augusta	5.5

Group 3

District	Density
Burgin	7.4
Eminence	7.9
Scottsville	8.8
Louisville	10.9

Group 4

District	Density
Frankfort	14.5
West Point	15.7

Group 5

District	Density
Owensboro	18.3
Science Hill	19.0
Walton Verona	19.5
Anchorage	21.0
Providence	23.9
Leitchfield	25.9
Monticello	26.2
Jenkins	26.3

Group 6

District	Density
Williamstown	27.4

Group 7

District	Density
Lynch	30.4
Caverna	30.8
Glasgow	34.2
Greenville	34.5
Paintsville	35.2
Bardstown	35.2
Newport	35.3
Shelbyville	36.1
East Bernstadt	42.5
Raceland	49.5

Group 8

District	Density
Silver Grove	46.0
Dawson Springs	59.4
Hazard	60.5
Pikeville	62.3
Harlan	66.3
Danville	77.1
Mt. Sterling	82.7
Corbin	86.3
Russellville	96.7
Barbourville	108.2
Jackson	113.6
Paducah	131.0

Group 9

District	Density
Paris	133.2
Hopkinsville	142.7
Williamsburg	157.8
Russell	174.0
Campbellsville	196.6
Bowling Green	220.5
Middlesboro	224.2

For example -- if $19,176 was the amount calculated for depreciation, then $105,364 + 19,176 = $124,540 which is the District's Total Basic Foundation Program Cost for Transportation.

E. Cost Per Pupil. Divide the district's total basic foundation cost by the gross ADA transported by the district. For example, a district has a total basic foundation cost of $124,540 and a gross ADA transported of 2,373.2. Therefore, by dividing $124,540 by 2,373.2 the cost per pupil is determined.

$124,540 ÷ 2,373.2 = $52.48 cost per pupil per year

F. Actual Cost Per Pupil Per Day. Divide the cost per pupil per year by the number of days school is in session. If the cost per pupil per year is $52.48 and the number of days in a school session is 170, then the cost equals .308 cents per pupil per day.

G. Graph Adjusted Cost. Transportation cost graph in accordance with KRS 157.370.

157.370 Allotment of transportation units

1. In determining the cost of the foundation program for each district, the Superintendent of Public Instruction shall determine the average cost per pupil per day of transporting pupils in districts having similar density of transporated pupils per square mile of area served by not less than nine different density groups. (See Table 4 for density groups used in 1970-71.)

2. The annual cost of transportation shall include all current costs for each district plus annual depreciation of pupil transportation vehicles calculated in accordance with the regulations of the State Board of Education for such districts that operate district-owned vehicles.

3. The aggregate and average daily attendance of transported pupils shall include all public school pupils transported at public expense who live one mile or more from school, provided that handicapped children may be included who live

TABLE 4. Average Density and Average Expenditures for County and Independent Districts. (Used for Calculation in 1971-72)

	County Districts			Independent Districts	
	Average Density	Average Expenditures		Average Density	Average Expenditures
Group 1	4.1	.346	Group 1	5.3	.107
Group 2	5.2	.323	Group 2	5.5	.364
Group 3	6.2	.304	Group 3	8.8	.312
Group 4	7.8	.275	Group 4	15.1	.582
Group 5	9.3	.256	Group 5	22.5	.142
Group 6	11.8	.236	Group 6	27.4	.127
Group 7	14.1	.222	Group 7	36.4	.113
Group 8	20.8	.206	Group 8	83.4	.113
Group 9	53.1	.194	Group 9	178.4	.113
Group 10	145.3	.205			

less than this distance from school. The aggregate and average daily attendance referred to in this subsection shall be the aggregate and average daily attendance of transported pupils the prior year adjusted for current year increases in accordance with State Board of Education regulations.

4. The square miles of area served by transportation shall be determined by subtracting from the total area in square miles of the district the area not served by transportation, determined in accordance with the regulations of the State Board of Education provided that if one district authorizes another district to provide transportation for a part of its area, such area served shall be deducted from the area served by that district and added to the area served by the district providing the transportation.

5. The density of transported pupils per square mile of area served for each district shall be determined by dividing the average daily attendance of transported pupils by the number of square miles of area served by transportation.

6. The Superintendent of Public Instruction shall determine the average cost per pupil per day of transporting pupils in districts having a similar density by constructing a smoothed graph of cost for all density groups as provided in subsection (1). This graph shall be used to construct a scale showing the average costs of transportation for districts having a similar density of transported pupils. Such costs shall be determined separately for county school districts and independent school districts, provided that no independent school district will receive an average cost per pupil per day in excess of the minimum received by a county district or districts. These costs shall be the cost per pupil per day of transported pupils included in the Foundation Program and such costs shall be recalculated each biennium.

7. The scale of transportation costs included in the Foundation Program for county and independent districts is determined in accordance with the provisions of KRS 157.310 to 157.440 for the biennium beginning July 1, 1960.

H. Curve of Best Fit. The curve of best fit is identified after plotting at least the nine averages for the density groups. Adjust the curve to a position so that as many points fall above the curve as below, this will be the curve of best fit. (It appears that for 1971-72 the curve is drawn through the points creating the curve, rather than among the points. See Figures 1 and 2.)

I. Graph Adjusted Cost Per Pupil Per Day. The curve of best fit is used to ascertain the adjusted cost per pupil per day. Table 5 shows the adjusted cost taken from the Transportation Cost Curve.

J. Aggregate Days. The aggregate transported days is determined by multiplying the Net ADA transported by the number of days school is in session. For example, the Net ADA transported in a district

FIGURE 1

The transportation cost graph is determined by using the average cost per day as the ordinate and the density of pupils as the abscissa, plot the average cost per pupil per day in each density group.

(County Districts)

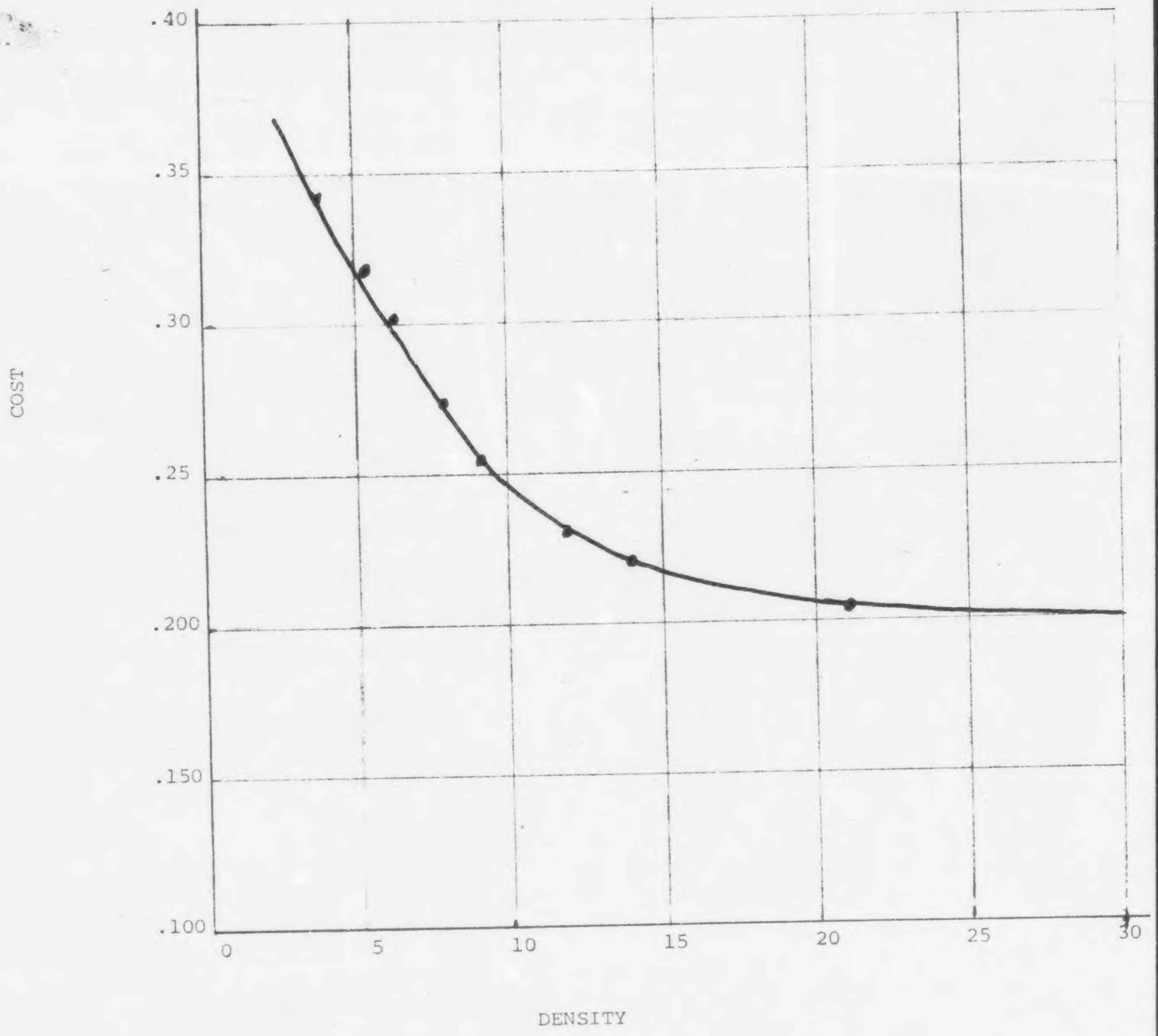
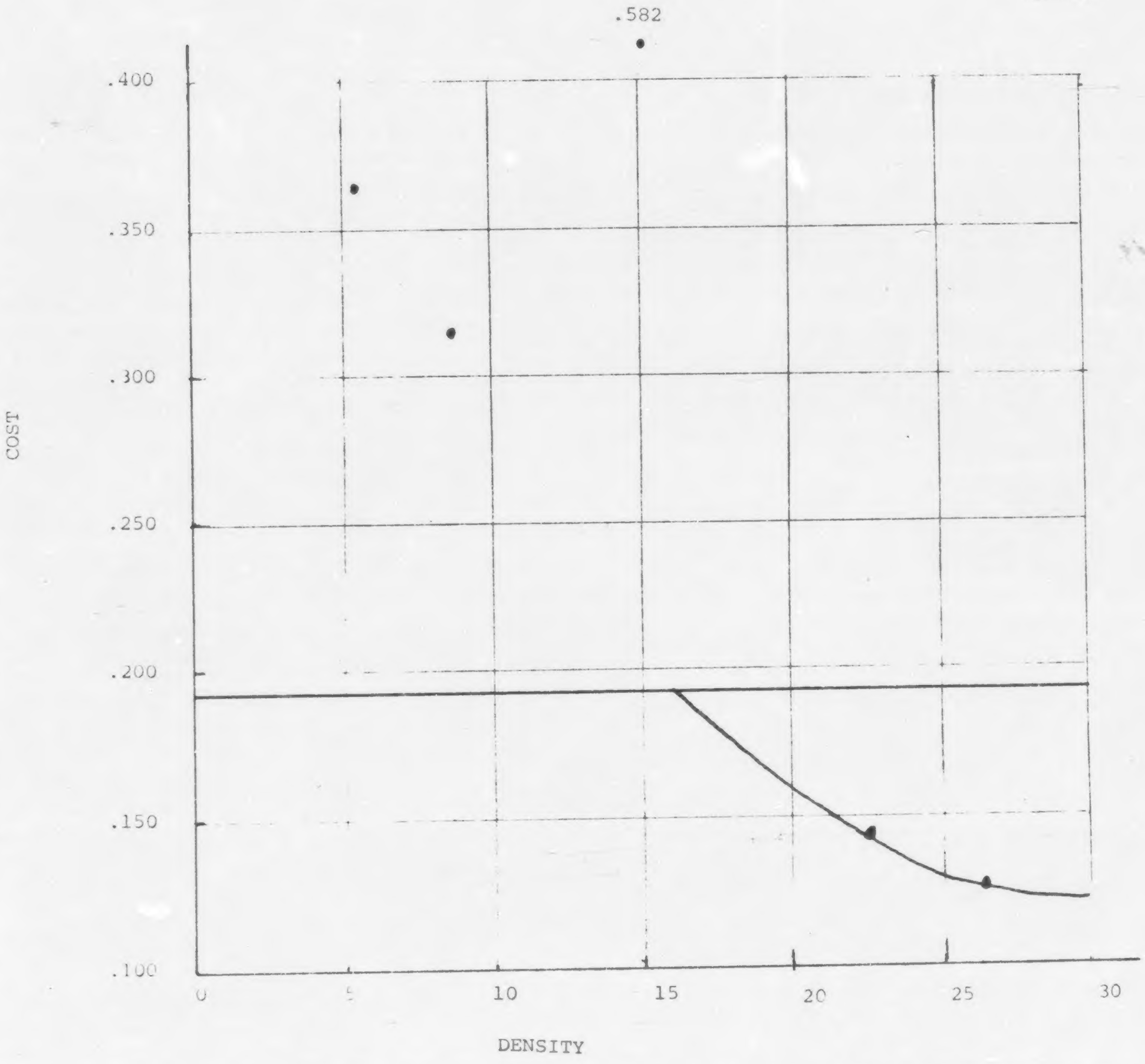


FIGURE 2

The transportation cost graph; is determined by using the average cost per day as the ordinate and the density of pupil as the abscissa, plot the average cost per pupil per day in each density group. Line at 19.4 in cost indicates the minimum received by a county district.

(Independent Districts)



is 2,143.5 and the number of days school is in session is 170. The aggregate transported days would be 2,143.5 X 170 or 364,395 aggregate days.

K. Adjusted Cost of Program. The final adjusted cost for each district is determined by multiplying the graph adjusted cost per pupil per day times the aggregate days transported. If the adjusted graph cost per pupil per day is .309 and the aggregate days transported is 364,395 then District X would have a formula cost of $112,598. This figure is then equalized in the foundation program computation by subtracting the required local school district effort from the various foundation program cost elements.

Methods for Calculating Transportation Allotment. The most vulnerable aspect of the present calculation is the grouping of districts into density groups. An inspection of the grouping shows little rationale in the manner in which they were selected. In the county districts, the plotted points represent from 6.2 percent to 14.8 percent of the total students transported. It is even more extreme in the independent district where four points represent only 4.4 percent of the students transported while one point represents 36.6 percent. There are other variations in the number of districts and the spread within each density range. The prevailing practices are shown in Table 6.

The present curve is not a curve of best fit but a curve which goes through the average density and expenditures for each of the groups. This means that the curve is very sensitive to changes in these points. By moving districts from one group to another, the average expenditures and

TABLE 5. Graph Adjusted Cost from Transportation-Smooth Line Curve

Group 1		Group 2		Group 3	
County	GAC*	County	GAC*	County	GAC*
Robertson	.371	Henry	.331	Monroe	.315
Crittenden	.362	Bracken	.329	Hancock	.314
Cumberland	.362	Elliott	.327	Ballard	.314
Livingston	.355	Trigg	.325	Calloway	.314
Caldwell	.353	Metcalfe	.325	Owsley	.314
Lyon	.351	Allen	.325	Morgan	.314
Hickman	.351	Ohio	.325	Wayne	.310
Owen	.348	Washington	.323	Grant	.308
Butler	.348	Garrard	.323	Casey	.308
Carlisle	.346	Hart	.323	Adair	.308
Todd	.340	Fleming	.321	Barren	.308
Lawrence	.340	Green	.321	Wolfe	.306
Grayson	.337	Spencer	.321	Gallatin	.306
Breckinridge	.337	Lewis	.317	Graves	.306
Logan	.335			Bath	.304
Webster	.335			Pendleton	.303
Nicholas	.335			Anderson	.303
Menifee	.333			Shelby	.300
McLean	.333			Union	.298
				Mercer	.298
				Bourbon	.298
				Edmonson	.298
				Trimble	.298
				Rowan	.297
				Larue	.293
				Jackson	.291

TABLE 5. (Continued

Group 4		Group 5		Group 6	
County	GAC*	County	GAC*	County	GAC*
Fulton	.289	Russell	.267	Johnson	.244
Clinton	.287	Mason	.265	Henderson	.244
Taylor	.284	Harrison	.264	Knox	.239
Rockcastle	.284	Powell	.263	Woodford	.237
Christian	.284	Warren	.262	Knott	.236
Lee	.278	Carter	.262	Clark	.232
Magoffin	.277	Boyle	.262	Jessamine	.230
Whitley	.279	Marion	.262	Oldham	.230
Hopkins	.275	Carroll	.259		
Pulaski	.272	Madison	.250		
Breathitt	.272	Greenup	.249		
Muhlenberg	.272	Clay	.249		
Meade	.269	Montgomery	.249		
Nelson	.268	Marshall	.245		
Estill	.268				
Simpson	.268				
Leslie	.268				
McCreary	.268				
Scott	.268				
Lincoln	.268				

Group 7		Group 8		Group 9	
County	GAC*	County	GAC*	County	GAC*
Hardin	.229	Floyd	.211	Kenton	.195
Bell	.228	Franklin	.211	Fayette	.194
Martin	.225	McCracken	.210		
Perry	.224	Boyd	.207		
Laurel	.223	Bullitt	.206		
Letcher	.223	Boone	.203		
Daviess	.214	Campbell	.200		
Harlan	.213				
Pike	.213				

Group 10	
County	GAC*
Jefferson	

TABLE 5. (Continued)

Independent Districts

Group 1

District	GAC*
Earlington	.194

Group 2

District	GAC*
Augusta	.194

Group 3

District	GAC*
Burgin	.194
Eminence	.194
Scottsville	.194
Louisville	.194

Group 4

District	GAC*
Frankfort	.194
West Point	.194

Group 5

District	GAC*
Owensboro	.177
Science Hill	.170
Walton Verona	.165
Anchorage	.152
Providence	.136
Leitchfield	.130
Monticello	.130
Jenkins	.129

Group 6

District	GAC*
Williamstown	.127

Group 7

District	GAC*
Lynch	.121
Caverna	.121
Glasgow	.115
Greenville	.115
Paintsville	.114
Bardstown	.114
Newport	.114
Shelbyville	.113
East Bernstadt	.113
Raceland	.113

Group 8

District	GAC*
Silver Grove	.113
Dawson Springs	.113
Hazard	.113
Pikeville	.113
Harlan	.113
Danville	.113
Mt. Sterling	.113
Corbin	.113
Russellville	.113
Barbourville	.113
Jackson	.113
Paducah	.113

Group 9

District	GAC*
Paris	.113
Hopkinsville	.113
Williamsburg	.113
Russell	.113
Campbellsville	.113
Bowling Green	.113
Middlesboro	.113

TABLE 6. Present Practices in Grouping

Groups	County Districts					
	Density		District		Students Transported	
	Range	Spread	Number	Percent	Number	Percent
1	3.0- 4.7	1.7	19	15.8	25,205.3	6.8
2	4.8- 5.5	0.7	14	11.7	22,774.7	6.2
3	5.6- 6.9	1.3	26	21.6	46,792.3	12.7
4	7.0- 8.3	1.3	20	16.7	54,412.2	14.8
5	8.4-10.6	2.2	14	11.7	39,966.5	10.8
6	10.7-12.8	2.1	8	6.7	24,511.1	6.7
7	12.9-16.9	4.0	9	7.5	50,223.3	13.7
8	17.6-27.8	10.2	7	5.8	31,866.5	8.7
9	48.3-57.9	9.6	2	1.7	23,584.1	6.4
10	145.1	---	1	.8	48,662.9	13.2
	Independent Districts					
1	5.3	--	1	2.2	35.7	0.2
2	5.5	--	1	2.2	33.0	0.2
3	7.4-10.9	3.5	4	8.7	828.9	4.0
4	14.5-15.7	1.2	2	4.3	100.5	0.5
5	18.3-26.3	8.0	8	17.4	1,917.1	9.3
6	27.4	--	1	2.2	304.6	1.5
7	30.4-49.5	19.1	10	21.7	3,637.0	17.6
8	56.0-131.0	55.0	12	26.1	6,212.4	30.1
9	133.2-224.2	91.0	7	15.2	7,540.6	36.6

density for that group could be changed. This change could affect the average expenditures and density in either the positive or negative direction. This can be demonstrated by combining the two districts together that make up groups one and two in the independent districts. The density average would become 5.4 and the average expenditure would be .236.

With the great advances in computer science much of the calculation now being done by hand could be done more accurately. The calculation lends itself to a mathematically sound formula which can be generated by a computer. The formula used in the following methods is $Y = aX^b$, which defines a curve in which Y values are related to some power of the X value. This curve is called a power curve which establishes a line of best fit from a curvilinear relationship. The Y value would represent the formula adjusted cost, while X would be the density of any school district.

The eight methods listed below have been calculated demonstrating their impact on the transportation allotments in Kentucky. In the appendix a complete listing of the effect each method would have on each district is shown. It will show the graph adjusted cost now, formula adjusted cost from that method, amount of increase or decrease, and the amount it would change the present transportation allotment.

A. 10 present group points applied to 120 county districts

B. 120 county points applied to 120 county districts

C. 120 weighted county points applied to 120 county districts

D. 9 present group points applied to 46 independent districts

E. 46 independent points applied to 46 independent districts

F. 46 weighted points applied to 46 independent districts

G. 166 points applied to 166 total districts

H. 166 weighted points applied to 166 total districts

Method A. The present ten points used in the calculation of the current transportation allotment for county districts were used to generate a line of best fit. The equation which was generated from this data is Y $Y = .38082 X^{-.15739}$. After finding this equation for the line of best fit, the densities for each of the 120 county districts were substituted for X. This gave values for Y, or the formula adjusted cost for each district. The formula adjusted cost varied from a high of .320 to a low of .174. The graph adjusted cost derived through the present method with these 10 points ranged from a high of .371 to a low of .194. The present method does not actually utilize point 10 because the slope from point 9 to point 10 reverses the curve. Under this method the formula adjusted cost for pupil transportation would be $16,085,740; this amount is $27,137 more than the present graph adjusted cost.

Method B. KRS 157.370(1) mandates that at least nine points be used for plotting; however, it does not restrict the number of points which may be used. This method has given equal weight to each of the 120 county districts. This completely eliminates the need for grouping. The equation which the computer generated from these 120 points was $Y = .474816 X^{-.26284}$ The formula adjusted cost varied from a high of .356 to a low of .128. Under this method the formula adjusted cost for pupil transportation would be $15,450,463; this amount is $608,140 less than the present graph adjusted cost. (See Appendix A for a graph and detailed information on each district.)

Method C. This method not only takes into consideration 120 county districts but also makes an allowance for the number of students transported in each district. Each district was weighted by the number of students transported. This meant that the point for one district might have ten times as much worth as a point for another district. The equation generated for this proposal was $Y = .354024\ X^{-.13110}$. The formula adjusted cost varied from .307 to .184. Under this method the formula adjusted cost for pupil transportation would be $15,984,571; this amount is $74,032 less than the present graph adjusted cost.

Method D. The present nine points used in the calculation of the transportation allotment for independent districts were used to generate the line of best fit. The equation which was generated from these 9 points was $Y = .414009\ X^{-.27155}$. The formula adjusted cost varied from a high of .263 to a low of .095. Under this method the formula adjusted cost for pupil transportation would be $469,017; this amount is $36,425 more than the present graph adjusted cost.

Method E. This method has given equal weight to each of the 46 independent school districts in the same manner as proposal B did for the county districts. This method would completely eliminate the need for any type grouping. The equation which the computer generated was $Y = .25962\ X^{-.19481}$. The various districts varied from a high of .188 to a low of .090. Under this method the formula adjusted cost for pupil transportation would be $404,882; this amount is $27,710 less than the present graph adjusted cost. (See Appendix B for a graph and detailed information on each district.)

Method F. This method not only takes into consideration the 46 independent districts but also makes an allowance for the number of students in each district. This is the same as method C except for independent districts. The equation which the computer generated was $Y = .200805\ X^{.10202}$. The formula adjusted cost ranged from a high of .169 to a low of .116. Under this method the formula adjusted cost for pupil transportation would be $464,168; this amount is $31,576 more than the present graph adjusted cost.

Method G. All 166 districts which have transportation have been given equal weight under this method. This would appear to be in conflict with KRS 157.370(6) which says that cost shall be determined separately for county school districts and independent school districts, provided that no independent school district will receive an average cost per pupil per day in excess of the minimum received by a county district or districts. The equation for this method is $Y = .543516\ X^{-.35537}$. The formula adjusted cost for county districts ranged from a high of .368 to a low of .093, while independent districts would range from a high of .300 to a low of .079. Under this method the formula adjusted cost for pupil transportation would be $14,612,616; this amount is $1,878,579 less than the present graph adjusted cost.

Method H. All 166 districts which have transportation have been included in this method. They have each been weighted according to the number of students transported. This would also appear to be in conflict with KRS 157.370(6) as it is now written. The equation generated for this method is $Y = .37344\ X^{-.15872}$. The formula adjusted cost for county districts range from a high of .287 to a low of .158. Under this method the formula adjusted cost for pupil transportation would be $16,399,413; this amount is $91,782 less than the present graph adjusted cost.

Analysis of Methods. After study of the various methods which have been presented the following conclusions have been made. It would appear that the most feasible proposals to utilize in the Kentucky transportation allotment would be method F for the county districts and method E for the independent districts. These methods involve plotting the total points for county and independent districts separately. This would range from a high of .188 to a low of .090. This would result in a more precise allocation determination for all the school districts in Kentucky. There are indications that as density increases in extremely large districts, there is a corresponding justifiable increase in transportation cost. It would appear that the current method of calculation accommodates the large, high density district; therefore, it is recommended that county districts with a density greater than 30 be considered as having a density of 30 in order to determine their formula adjusted cost. With this adjustment the formula adjusted cost for all pupil transportation in Kentucky would be $16,531,389. This amount is $40,194 more than the present graph adjusted cost.

Kentucky Compared with Other States

The transportation formula adopted in 1960 in Kentucky has worked well in up-grading and improving the transportation system. In 1971-72 the total cost of transportation in the state, excluding federal money, was $18.5 million. After the cost of transportation had been figured and equalized according to the formula, local districts received $12.6 million for transportation through the Foundation Program. In essence--this means that the state pays $12.6 million or 68 percent of the total cost of transportation.[12] When the above figures are compared with states that adjoin Kentucky, it gives a better perspective of their relative significance. While the state of Kentucky pays approximately 68 percent of the cost of transportation, the state of Virginia paid approximately 45.7 percent[13] for 1971-72, while the state of Indiana paid approximately 38 percent[14] of total transportation cost. The state of West Virginia law provides "An amount equal to five and one-half percent of the total state allocation for professional educators, such amount to be distributed in proportion to the number of full-time school bus drivers employed within the several counties."[15] The West Virginia law also provides for payment of eighty percent for maintenance, operation, and related costs, exclusive of salaries.[16] This is only a comparison of a few of the nearby states with Kentucky. When all of these figures are calculated, they fall short of the state percentage distributed by the Kentucky Foundation Program. Stollar found few similarities in programs now being used in the fifty states. He describes the various types of financing transportation as follows:

1. All but six states have assumed some responsibility for pupil transportation. More often than not county funds rather than state funds are used to aid local districts with their transportation problems.[17]
2. Only eighteen of the forty-four states which provide funds for pupil transportation include their allocation as part of their foundation programs. Therefore, some states are giving disproportionately more funds to wealthy districts than to the less wealthy.

3. If one factor holds for all state formulas it would appear to be that the allocation of state funds are complicated and difficult to interpret. The attributed factor (the authors would agree) seems to be the proliferation of overlapping and small districts. Obviously it is easier to devise a simple formula for a state with fewer districts.
4. The equalization of equality of educational opportunities is negated as it pertains to transportation in fifteen states because these states distribute aid on a flat grant basis.
5. All of the approved expenditures for pupil transportation are paid by twelve states. Although the state pays 100 percent of all approved costs, it is thought that this method does not encourage efficiency.
6. In 28 states, computed allowable expenses are reimbursable. These formulas include factors such as: number of pupils transported, bus miles traveled, number of buses used. Stollar states that such formulas should include density and cost of buses which the Kentucky formula does.[18]
7. Only seven states still allow for road conditions, this factor has been phased out because of improved road conditions and modern equipment.
8. Density factors have become more common, especially in states that have recently revised and improved their formulas. The use of area density of pupils to be transported has given way in a number of states to density as determined by the number of pupils to be transported per mile of bus travel. The latter

method is more common where the population is concentrated along principal roads rather than being evenly distributed. Two methods of computing density are (1) the number of students transported divided by the number of square miles in the district or (2) the number of students transported by the number of bus miles traveled to and from school each day.

9. Eligibility for pupil transportation is established by a required distance in forty states. This varies from one to three miles, with the typical requirement being about one and one-half miles for elementary students and two miles for high school.

10. Some states are waiving minimum distance requirements when pupils are required to travel along dangerous highways or roads. This decision is typically made by the state board of education.

11. The states are now providing state-support for the transportation of handicapped students.

12. The states are now becoming involved in the purchase of public school buses. Twenty-eight states now participate to some degree. The degree ranges from complete payment at the time of purchase to depreciation payments allocated over a period of years.

13. Approximately one-third of the buses in operation in the United States are privately owned and contracted out to schools for pupil transportation. Although so many are

privately owned the trend is toward state ownership of buses. The advantages of state ownership are the economic aspects, more control over services, and greater efficiency in operation.[19]

14. Generally more than half of all pupil transportation funds come from the local school administrative units.
15. Some states have provisions for voting special tax levys which may be used for transportation; this may be an attempt to void ceilings placed on general school taxes.[20]

The Future of Transportation Financing

Undoubtedly the next decade will bring many changes in pupil transportation and it will remain one of the major services rendered by the public schools. Although the growth of the school population enrollment in the next decade will remain relatively stable, the growth of pupil transportation will increase significantly. This expansion of pupil transportation will be directly related to numerous variables.

As school districts continue to eliminate smaller schools, a need for transportation will increase. This increase will also be affected by reorganization and the demand to eliminate inadequate programs.[21] States are continually revising distance limitations which will make more children eligible for transportation services. This service will be offered to protect students from hazards connected with walking along dangerous highways and roads.[22] In addition, numerous states are considering the introduction of early childhood education programs. As these programs are established, a greater need for transportation will be justified. McLure states that the expansion of early childhood education programs will have the greatest effect on transportation cost in small towns and rural areas where currently these programs are least developed.[23]

"Busing" of students to bring about social integration is another aspect which has received a great deal of attention in recent years and will continue to receive considerable debate. The concept of "busing" evolved as a technique for increasing educational opportunity for minority group youth. It is one alternative for breaking up larger concentrations of minority groups and mixing them more proportionately with other ethnic groups.[24] The federal courts in Kentucky have not required massive "busing," and the future of writ mandated "busing" is uncertain at this time; therefore, for the purposes of this study, no attempts were made to project the cost of such eventualities.

Transportation to increase the learning environment of the classroom could expand costs significantly.[25] Culp and Featherston discuss the pros and cons on the use of buses for instruction. School buses at present are commonly used for visits by students to points of interest related to class materials, transportation to interscholastic contests (athletics, drama, debate, etc.), trips to health clinics, and trips for exchange assemblies, student congress, and any number of other types of activities. Some states have passed laws which limit and control the use of buses for these types of purposes. The use of school buses for instructional type trips is specifically authorized by law in twenty states and two other states have laws which appear to grant authorization.

Another significant variable which may bear on the future of financing transportation is Standard 17. Standard 17, the official title of which is Pupil Transportation Safety, was developed in accordance with section 402 of the Federal Highway Safety Act of 1966. Standard 17 is designed to improve state programs for transporting pupils safely in urban and rural areas. It will set a requirement that governs people and safe equipment, equipment maintenance, selection, training, and supervision of drivers and maintenance personnel, administration provisions in the field of pupil transportation. Some of the effects will be uniformity of color of vehicles and the eventual elimination of standees on school buses. All of these aspects will have significant cost factors.[26]

School transportation systems are used for school activities in all states, but statistics are not available regarding the kind and number of trips, the miles traveled, or the number of students involved. It appears that transportation for instruction will become more common.

The urban school districts could be greatly influenced by projected new developments in "rapid transit systems." With the trend toward more transportation in the urban setting, modern systems of transportation could greatly facilitate means of moving children.[27]

Another significant variable is inflation. In the sixties the number of pupils transported increased 50 percent. McLure states "In the 1970's an annual inflation of 3 percent plus an overall increase in number of pupils transported from a low of 10 percent to a high of 25 percent would result in a total increase from a low of 50 percent to a high of 65 percent above the $900 million national expenditure in 1968-69." Needless to say the inflation factor will be significant not only to transportation but all aspects of the school economy.[28] The Bureau of the Census[29] predicts no anticipated increase during the decade in the total number of school-age children attending school.[30] But because of the previously discussed variables, an increase in the number of pupils to be transported in Kentucky can be expected in the next decade. Because of factors such as fertility rates during the 70's, migration patterns, economic growth and the previously mentioned education factors, the impact on transportation in the next decade will be considerable.

Numerous factors must be considered when trying to project the cost of transportation during the next decade. Studies presented by the National Educational Finance Project recommend tremendous changes which if implemented will have great effect on financing education. The National Educational Finance Project and others suggest that at least a three percent inflation figure should be calculated in determining the cost of transporting pupils.[31] The cost projections for this study will substantially exceed this simple annual inflation increment. The rationale being that during the sixties the economy experienced tremendous inflation rises. Therefore, these increases will be reflected within the actual cost figures used for projections. The method of projection will be linear or a straight line projection, the same as that used by the NEFP. But, assuming that inflation is built into the base years, the following figures are cost projections for the next decade but should be viewed as rough estimates because of variables that cannot be identified for present calculation. A standard

TABLE 7. Actual Pupil Transportation Cost 1960-61, 1970-71 and Projected Pupil Transportation Cost 1971-72, 1984-85.

Year	Transportation Cost
1961-62	$ 10,166,312
1962-63	10,733,137
1963-64	11,292,481
1964-65	11,602,129
1965-66	11,893,618
1966-67	12,178,096
1967-68	13,234,636
1968-69	14,912,866*
1969-70	16,695,528*
1970-71	18,711,328*
1971-72	19,942,586* (32)
1972-73	19,505,816
1973-74	20,462,543
1974-75	21,419,927
1975-76	22,375,997
1976-77	23,332,724
1977-78	24,289,451
1978-79	25,246,178
1979-80	26,202,905
1980-81	27,159,632
1981-82	28,116,359
1982-83	29,073,086
1983-84	30,029,813
1984-85	30,986,540 (33)

*This amount includes money received from federal programs for transportation and for rental of buses to school districts.

error of measurement was not calculated because it would not be feasible. Therefore, the predicted state and local cost of transportation for 1984-85 will be $30,986,540.

Criteria for Evaluating Formula for Distributing State Aid for Pupil Transportation

After more than a half a century of studies and experimenting with various methods of financing pupil transportation, some criteria have evolved. These criteria are of the utmost importance in determining if transportation systems function efficiently.[34] Using these criteria, the authors will endeavor to measure the Kentucky transportation system.

Any state formula must take into account factors which cause variations in determining and justifying the cost of transportation services. One of the early plans was the percent of children who lived in a rural area but this plan has been generally discarded because of urban and suburban needs. Other factors used include density of transported population, road conditions, and wage level of the area. It has been accepted in recent years that one of the most important factors is the density of transported population. The present Kentucky formula uses density as the primary factor in determining cost. This method does not take into account labor costs and road conditions of various geographical areas.[35] Although the Kentucky formula does use a relatively reliable factor in density, a survey conducted by the authors revealed that a majority of Kentucky superintendents believe the road condition factor should be considered.[36]

A second criterion is that the factors used in determining cost cannot be manipulated by local school transportation personnel.[37] In surveying local districts and in viewing the Kentucky system, it appears that the nature of the system with its objective formula tended to prevent manipulation. Although no instances were revealed, it was quite evident that economy and efficiency could be improved by increasing the State Department staff to work cooperatively with local education agencies to solve transportation problems.

One of the basic premises of the Kentucky formula is that it rewards districts that operate an efficient system. This is perhaps the only formula in the state that rewards and promotes efficiency. In reviewing the formula the question arose, does the formula encourage so-called economic efficiency to the point of providing unsafe means of transportation?

As explained previously, the formula reimburses a district according to the calculations as determined by the smooth line curve. If District X had a calculated cost per pupil per day of .309 and a graph adjusted cost per pupil per day of .326, then theoretically its reimbursement would be calculated using the .326 figure. Therefore, it must be determined why District X had an actual transportation cost less than the calculated cost. Over all it appears that the premise of efficiency is valid but districts must be cognizant of the fact there is a minute difference between the lower limits of efficiency and the upper limits of safe operation.

The current transportation program in Kentucky is unique because of this efficiency feature. It, in essence, requires all school districts to conform to a state average measure of efficiency. The efficiency standard is established by the actual operation of all transportation programs in the state and any district departing from the line of efficiency is penalized.

The basic question is, of course, does this efficiency standard tend to create cost cutting to the detriment of child safety. The answer from our observation and survey is negative, uniform standards of school bus safety established at the state level help prevent unsafe cost-saving practices. These standards do not, however, prevent overcrowding in an effort to reach maximum efficiency.

When critically analyzing the cost of transportation from 1929-30 to 1969-70, the factor of efficiency is extremely high as shown in the following table:

TABLE 8. Trends in Transportation Expenditures, 1930-70.

Year	Transportation Expenditures in Current Dollars	Transportation Expenditures in 1969 Dollars	Pupils Transported	Expenditures in 1969 Dollars
1929-30	$ 282,502	$ 604,312	14,487	$ 41.71
1969-70	18,797,742	18,797,742	420,287	44.73 (38)

The data presented in Table 8 shows total expenditures for transportation in the state of Kentucky expressed in 1969-70 dollars. When the expenditures are examined in 1969-70 dollars, the per pupil expenditure increased only slightly during the period 1929-30 and 1969-70. Therefore, there is little doubt concerning the efficiency of transportation. Using the same basis of 1969-70 dollars, total expenditures for education per pupil in ADA in 1969-70 dollars increased from $233 per pupil in 1929-30 to $936 per pupil in 1969-70.[39] While total education cost throughout the nation increased 302 percent per pupil, Kentucky transportation cost per pupil increased seven percent.

The present Kentucky transportation formula and process of determining cost and allocations seem to measure up quite substantially with predetermined criteria. There are a few areas that would appear to need strengthening or upgrading.

PECOMMENDATIONS

From committee meetings, study of Kentucky's system, and interviews with transportation administrators, the following recommendations are submitted:

1. The entire pupil transportation calculation should be computerized in order to standardize calculating procedures. The formula to be used is $Y = aX^b$ and would be generated by plotting the 120 points for county and 46 points for independent districts separately.
2. Full state funding for the formula adjusted cost of pupil transportation costs.
3. School districts should receive supplementary allotments for transporting exceptional children. This should be double the formula adjusted cost and be in addition to that received in the regular transportation allotment.

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SCHOOL DISTRICT ORGANIZATION IN KENTUCKY*

Since 1931 the number of local school districts in the nation has been reduced from 127,531 to 16,920.[1] This reduction of 87 percent during four decades did not result by chance. School districts were created pursuant to statutes enacted by state legislative bodies; specific powers were then delegated to local school districts by the states in conformity with constitutional requirements applicable in a particular state.

Objectives of School District Reorganization

The primary objective of school district reorganization is not to increase size or to reduce the number of local school districts in the states and nation. Instead, the rapid reduction in the number of districts has resulted from an attempt to attain specific educational objectives. The Great Plains Reorganization Project, a recent major study, listed the following major objectives of school district reorganization:[2]

1. The individual educational needs of each student should be enhanced by the educational program.
2. Local district organization in a state should be conducive to an equalization of educational costs.
3. District organization should facilitate the effective use of teachers and other professional personnel.
4. The educational structure within a state should promote the most effective use of school dollars.

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*A study performed by William R. Wilkerson and W. Monfort Barr, Professors of Educational Administration, School of Education, Indiana University.

The Great Plains study of reorganization stressed the dual purpose of local school district reorganization - improvement of educational programs and services coupled with prudent use of school funds. A recent study of Kentucky school districts by Peyton stressed similar objectives.[3] The scope of the educational program, the range of services offered, the preparation of certificated personnel, and the utilization of educational technology should be determining factors in school district reorganization. The financial base of each school district should be adequate to support the above programs and services. "It thus becomes imperative that we find ways to get the most out of our educational dollar."[4]

School District Enrollment

Examination of recent studies of reorganization of local school districts indicates that the best available guidelines for optimum local district enrollment range from 10,000 to 20,000 pupils.[5]

Admittedly optimum enrollment levels for all districts may not be feasible in some states. Sparsity of population and excessive pupil travel distances are conditions which cannot be ignored. The existence of strong town government in New England and the predominance of county government in the Southeastern states are influencing factors. Yet, only Arkansas, among the Southeastern states, has more local school districts than Kentucky.[6]

A major purpose of this study is to suggest optimum enrollments for Kentucky school districts which are conducive to providing an efficient system of schools throughout the state.

Kentucky School Reorganization

The progress of Kentucky school district reorganization in recent years has not been as rapid as in some states. In early days Kentucky authorized district schools, wherever desired, when from 30 to 100 pupils were available. By 1937 a minimum standard of 560 elementary pupils was proposed. Of the 7,592 buildings reported in 1935, the number of one-teacher schools was 5,367, and the number of two-teacher schools was 995. A total of 311 districts were in operation, a substantial reduction from the 554 in 1915. The following table illustrates the deliberate pace of Kentucky school district reorganization over a period of nearly 60 years.

TABLE 1. Number of Kentucky Local School Districts

Year	Independent districts	County districts	Total
1915	434	120	554
1925	313	120	388
1935	191	120	311
1938	142	120	262
1972	70	120	190

Source: Compiled from various histories of Kentucky public schools.

As shown in Table 1, the decrease in the number of Kentucky school districts has resulted from the merger of independent school districts. How adequate are the enrollments in Kentucky's 190 school districts?

Two-thirds of the independent districts had fewer than 1,500 pupils. Thirteen percent of the county districts had similar low enrollments. Conant's suggested minimum of 1,500 pupils was designed to provide 100 graduates in a high school. During the years that have passed since his study, curricular studies have recognized that this number of students is not adequate to assure economic efficiency in providing the programs and services which should be offered by a school district today. Nor will 100 graduates suffice as a measure of a high school which is large enough to provide the secondary program which is needed in the 1970's.[7]

State Reorganization Patterns[8]

States have used several methods to accomplish school district reorganization. Among the variations have been:

1. State studies followed by mandatory reorganization by the legislative body, as occurred in West Virginia in the 1930's.

2. Mandatory area studies, followed by reorganization plans developed by an area committee, and voter approval or disapproval. This approach, approved by statute in Michigan in 1949, was the forerunner of a similar plan in the 1959 Indiana reorganization law.

3. A permissive plan which provides for voluntary merger by neighboring school districts, as prevails in Kentucky.

School district organization has never been static. Even the state of Hawaii, which consists of a single school district, constantly seeks to improve the organization patterns. Generally speaking, however, states have used mandatory, semi-permissive, or permissive legislation in their search for district organizational patterns which will maximize provision of quality educational programs and services while seeking prudent expenditure of the school dollar.

Characteristics of Kentucky School Districts

Table 2 shows recent trends in the number of school districts in Kentucky. In the 11 years shown in the table the number of districts dropped from 212 to 190, or by an average of two annually.

TABLE 2. Number of Kentucky School Districts (1960-61 to 1971-72)

Year	Total
1960-61	212
1961-62	209
1962-63	206
1963-64	204
1964-65	204
1965-66	204
1966-67	200
1967-68	199
1968-69	195
1969-70	193
1970-71	192
1971-72	190

Source: _Summary of Kentucky Statistics_, Kentucky Department of Education.

A state study of school holding power indicates that the number of very small high schools (those with fewer than 30 graduates per year) dropped from 112 in 1959-60 to 24 by 1970-71.[9]

Table 3 shows Kentucky school districts in 1971-72, classified by enrollment. More than 50 percent of the districts enrolled fewer than 2,500 pupils, and only 16.7 percent of the districts had more than 5,000 pupils. Only 15 of the independent districts had more than 2,500 pupils, and 45 of the 120 county districts enrolled fewer than 2,500 pupils.

TABLE 3. Kentucky School Districts, 1971-72, Classified According To Enrollment in County and Independent Districts

Enrollment K-12	Independent	County	Total	Percent of total school districts
0 - 2,500	55	45	100	52.6
2,501 - 5,000	9	49	58	30.5
5,001 - 8,000	4	16	20	10.5
8,001 - 16,000	1	7	8	4.2
16,001 - 48,000	0	2	2	1.0
48,001 - 112,000	1	1	2	1.0

Source: Kentucky School Directory, 1971-72.

Many of the small independent districts were located in counties which also had enrollment of less than 2,500. Application of any of the recognized criteria (for minimum enrollment of school districts which would permit adequate educational offerings with economical costs) to Kentucky reveals that the state has far too many small enrollment districts.

One criterion almost invariably adopted by states seeking to solve their school district organization problems is that each district should offer a complete educational program from kindergarten through grade 12. Educational programs are frequently difficult to coordinate when a district transfers out high school pupils - also, parents of transferred pupils may have no legal means of influencing the educational program of the receiving district since they are not taxpayers or eligible voters in the receiving district. Kentucky has five districts which do not operate high schools. These are shown in Table 4.

TABLE 4. Kentucky Districts Which Do Not Operate High Schools

School District	County	Enrollment	Per pupil assessed valuation
South Gate (Elementary)	Campbell	207	$85,135
West Point (Elementary)	Hardin	318	25,363
Anchorage (Elementary-Junior High)	Jefferson	305	54,581
East Bernstadt (Elementary)	Laurel	302	12,326
Science Hill (Elementary)	Pulaski	177	40,690

Non-high school districts are often maintained to provide residents with tax havens. However, educational reasons and the need for efficient use of school funds have caused most states to merge such districts, usually with the system which receives the majority of the transferred pupils.

Reorganization and Instruction

School district reorganization studies have consistently stressed the curricular benefits of local district reorganization. Districts having only a few pupils find it difficult to provide a broad educational program for children in grades K through 12. They also find it difficult to provide the educational services which are so important for development of a quality educational program.

The scope of educational offerings and services has constantly increased in recent years. Individualized instruction, special education, career education, technical education, and related concepts are now considered necessary in all public school systems. Specialists in health services, pupil personnel activities, psychological services, and administration of special services are less expensive when spread over a large number of pupils. Costs of such specialists may be prohibitive in districts with low enrollments.

Conant, nearly 15 years ago, pointed out that a high school having fewer than 100 graduates could provide a comprehensive program only with great difficulty. He further emphasized that with fewer pupils a quality program could not be provided, even if reasonable cost was not an object.[10]

Since the time of Conant's study of the comprehensive high school several significant studies have come to similar conclusions. Among these were the AASA study in 1960, the Great Plains study in 1968, and a number of state studies. These studies suggest that a desirable minimum for a school district is an enrollment that will make possible a graduating class of 150 in the high school. The offerings in a comprehensive high school now require more pupils than at the time of the studies in the 1950's.

A 1967 Iowa study analyzed the curricular offerings by size of district.[11] Average high school offerings in districts having from 500 to 750 pupils were 69.8. Districts enrolling more than 3,000 pupils averaged 100.7 course offerings. Areas which accounted for the increased number of offerings were fine arts, foreign language, business education, vocational education, special education, and technical education.

Manatt,[12] in his eight state study of administrative costs found an enrollment of 3,000 to 3,500 pupils or more to be desirable if adequate and economical program and service functions were to be provided in selected areas of instruction.

The quality of an educational program is not easily measured. A number of factors, however, are directly related to quality programs. Among these, available for Kentucky schools, are accreditation, number of ninth graders graduating, number of graduates who attend college, and training of teachers.

Accreditation of Kentucky Schools

Kentucky schools are classified and accredited by the State Board of Education on the basis of recommendations of the Division of Elementary and Secondary Education. The intent of the rating scheme is not to suggest variances in the quality of program and services, but it focuses on the extent of programs and service offerings - although these latter two factors are frequently used as measures of quality.

Public secondary schools are classified as follows:

1. Comprehensive - must enroll at least 100 seniors and 600 students in grades 9-12 and must provide a rather broad range of educational programs based upon the 10 state approved curriculum areas. Minimum number of unit offerings for a four-year high school is 45. Rationale for mainimum enrollment is that "it is nationally recognized that program breadth becomes impracticable for smaller numbers."[13]

2. Standard - must offer and enroll annually pupils in a program from each of the 10 state approved curriculum areas. Minimum number of unit offerings is 35 for a four year high school.

3. Basic - must offer and enroll pupils in a program from each of the 10 state approved curriculum areas. Third and fourth year courses can be offered in alternate years. Minimum number of unit offerings is 26.

4. Emergency - must offer programs in 7 of the 10 curriculum areas. Minimum number of unit offerings is 18.

Other factors which help determine the rating classification include qualifications of and duties assigned to principals, load and assignment of faculty, assignment of special instructional personnel, and extent of guidance services.

The minimum requirement for high school graduation is 18 units. Since schools rated "Basic" need offer only 26 units, pupils in these schools possibly do not have access to an educational program which satisfies their unique needs and capabilities. Schools rated "Standard" afford pupils more options, and those rated "Comprehensive" must offer at least 27 units beyond the minimum required for graduation. A unit refers to a course which meets for an average of one hour each day in the week, for the entire year. A unit could thus be comprised of an American History course which met for the entire school year, or by a combination of a one-semester course in Government and a one-semester course in Economics.

Table 5 shows ratings assigned by the Department of Education to Kentucky high schools, categorized by enrollment. Data indicate that the trend is toward higher ratings in districts having larger enrollments.

TABLE 5. Accreditation Classification of Kentucky High Schools, By Enrollment Categories, 1971-72

Enrollment	Number rated Comprehensive	Number rated Standard	Number rated Basic	Number rated Emergency	Total
Under 300	0	10	47	3	60
301 - 700	5	63	32	0	100
701 - 1,000	26	30	3	0	59
1,001 - Up	51	9	0	2	62

Source: Kentucky School Directory, 1971-72, Kentucky Department of Education.

Of those high schools with less than 300 pupils, 83 percent were rated as Basic or lower. Of schools with 301-700 enrolled, only 32 percent were rated at that level. Only 5 percent of schools with 701-1,000 pupils were rated as Basic or less, and 82 percent of schools with more than 1,001 pupils received the highest rating (comprehensive) awarded by the state. Two schools in the largest enrollment category were rated as only Accredited; however, further investigation revealed that they were new schools not yet enrolling 12th graders.

In 1969-70, only 119 of the 350 public secondary schools (including junior high schools) in Kentucky were accredited by the Southern Association of Colleges and Schools, the official accreditation agency of the Southeast region.[14] While schools are under no legal pressure to obtain Southern Association approval, ordinarily only those which can meet the standards do seek accreditation.

Elementary schools are also accredited by the State Board of Education. The scheme of classification again is based primarily upon the extent of program and services rather than directly upon quality, although it can be argued that scope of program and services is a valid indicator of quality.

Public elementary schools, in order to be considered for accreditation, must employ a minimum of eight teachers. Classifications are:

1. Extended - provides an enriched program of studies and other features beyond those required for a standard rating. Opportunity should be provided for study in foreign languages, shop, homemaking, creative activities, and remedial programs. The extended program also provides more special services and sets up more exacting provisions for qualifications and duties of personnel.

2. Standard - meets regulatory requirements and substantially meets all criteria relating to teaching staff, offerings, library materials, facilities, instructional materials, principals, etc.

3. Basic - fails to meet the minimum requirements in one or more areas but provides the required program of studies and has properly certified personnel.

4. Approved - presumably meets legal provisions of school law and can continue to operate on a temporary basis.

5. Unaccredited - employs fewer than eight teachers.

Table 6 shows the number of Kentucky elementary schools with each accreditation rating, according to enrollment. As might be expected, most of the schools with fewer than 200 pupils also had less than 8 teachers and thus were not rated. In the 201-400 enrollment category, about 50 percent of the schools were rated as Standard or Extended. In the 401-600 category, 70 percent were rated Standard or above. The percentage receiving the

TABLE 6. Accreditation Classification of Kentucky Elementary Schools, By Enrollment Categories, 1971-72

Enrollment	Number rated extended	Number rated standard	Number rated basic	Number rated approved	Number not rated	Total
Under 200	0	12	32	11	220	275
201 - 400	8	175	168	12	6	369
401 - 600	9	164	68	4	1	246
601 - 800	11	101	27	0	0	139
801 - Up	8	43	6	2	0	59

Source: Kentucky School Directory, 1971-72, Kentucky Department of Education.

upper two ratings increased to 87 percent for schools with 601-800 pupils; a similar percentage ranked Standard or Extended for schools above 801 in enrollment. With both elementary and high schools, the tendency was for the larger schools to have received higher ratings than the smaller schools.

Internal Organization of School Districts

The existence of school districts with a pupil population sufficient to guarantee high schools of adequate size does not necessarily mean that small, inefficient high schools will be eliminated. In 1970-71, the following county school systems were still operating very small high schools, even though the total pupil population would permit otherwise.

District	Number of high schools	Total number of high school seniors, 1970-71	Range of sizes of senior classes
Barren County	4	205	31- 68
Bell County	3	231	32-148
Caldwell County	2	160	22-138
Carter County	3	265	55-117
Clay County	2	252	41-211
Floyd County	8	580	19-166
Graves County	7	274	24- 58
Greenup County	3	292	35-140
Hopkins County	3	466	76-302
Knott County	4	329	21-112
Knox County	2	264	61-203
Letcher County	3	292	62-148
Lincoln County	5	256	26- 70
Logan County	5	200	29- 65
Marshall County	3	337	46-181
McCracken County	3	411	102-177
Muhlenberg County	5	270	30- 77
Ohio County	2	231	25-206
Perry County	4	228	21-111
Pike County	9	882	58-221
Pulaski County	5	299	36-130
Rockcastle County	3	183	39- 81

In addition to those county school districts listed above, several other counties operated more than one high school, even though the total twelfth-grade enrollment for the county was less than 150. These districts were Grayson County, Lewis County, Martin County, McCreary County, McLean County, Monroe County, and Morgan County.

Not shown in the table are the 33 independent districts which had senior classes of less than 150 in 1970-71. Only 16 of the 49 independent districts (Glasgow, Ashland, Ft. Thomas, Newport, Covington, Hopkinsville, Owensboro, Russell, Elizabethtown, Henderson, Louisville, Covington, Erlanger, Paducah, Somerset, and Bowling Green) had senior classes of more than 150 in 1970-71.

Geographical features may be a factor preventing efficient internal consolidation of high schools in a few districts, but this is not true for most districts. Similar data are available for elementary and junior high schools to reinforce the contention that much work needs to be done in Kentucky to consolidate schools so that pupils and taxpayers may reap the potential benefits from efficient intra-district organization.

Table 7 presents data on the number of schools with small enrollments, grouped for convenience by Kentucky Education Association districts. Far below any recognized minimum enrollment criterion are the 275 elementary schools which enroll less than 200 pupils and the 106 high schools which enroll fewer than 400 pupils.

Table 7. Kentucky School Districts, Grouped by KEA Districts, and Number of Low Enrollment Schools

Kentucky District Education Association	No. of counties in District Education Association	Total no. of school districts in District Education Association	Elementary buildings with under 200 enrolled	Junior high buildings with under 200 enrolled	High school buildings with under 400 enrolled
First	13	17	22	0	12
Second	8	13	9	1	7
Third	13	20	16	0	16
Fourth	11	17	22	1	3
Fifth	7	11	6	1	3
Middle Cumberland	7	10	14	0	6
Central Kentucky	21	30	32	1	16
Northern Kentucky	9	22	10	0	5
Eastern Kentucky	18	26	55	1	21
Upper Kentucky River	7	10	48	0	11
Upper Cumberland	6	14	41	0	6
Total	120	190	275	5	106

Source: Kentucky School Directory, 1971-72, Kentucky Department of Education.

Teacher-Pupil Ratio

Table 8 shows the ratio of pupils to teachers by selected enrollment categories for Kentucky school districts in 1970-71. No discernible relationship seems to exist between district size and pupil-teacher ratio.

TABLE 8. Average Pupil-Teacher Ratio For Selected Enrollment Categories For Kentucky School Districts, 1970-71.

Enrollment	Number of districts	Number of independent districts	Average pupil-teacher ratio
1 - 250	3	3	23.5
501 - 750	9	8	20.0
1,001 - 1,500	24	14	21.7
2,001 - 2,500	20	2	20.7
3,001 - 3,500	18	2	21.1
4,001 - 5,000	11	1	21.8
5,001 - 6,000	12	3	21.8
8,001 - 16,000	8	1	21.8
48,001 - 80,000	1	1	21.8
80,001 - Up	1	0	22.5

Source: *Profiles of Kentucky School Districts, 1970-71*, Kentucky Department of Education, March, 1972.

Except for the very small districts, the ratios for different enrollment categories were similar. Under the Mimimum Foundation Program funds are distributed on the basis of enrollment converted to instructional units.

Since districts with fewer than 250 pupils did not operate special education programs, this might explain the relatively high ratio of 23.47. When an enrollment of 4,000 pupils was reached, the ratios remained constant except for Jefferson County, whose ratio was 22.5.

College Entrance by High School Graduates

A 1972 study of holding power of Kentucky schools contains a wealth of data pertinent to this report.[15] Each Kentucky high school, public and non-public, supplied follow-up data on all 1971 high school graduates; included were data on college attendance. For the public schools of the state, 41.1 percent of 1971 graduates were attending college. This percentage, while lower than the 1968 percentage of 44.6, still represented a marked improvement over 1962, when only 35.3 percent of graduates attended college. Table 9 shows the percentage of 1971 graduates attending college according to graduating class size categories. For all public

TABLE 9. Number and Percent of 1971 Kentucky Public High School Graduates Entering College

Senior class size category	Total number of graduates	Total number entering college	Percent of graduates entering college
10 - 29	545	199	36.5
30 - 59	2,633	1,012	38.4
60 - 99	5,271	1,910	36.2
100 - 199	12,043	4,806	39.9
200 - Up	18,159	7,990	44.0

high schools, 41.2 percent of graduates entered college. That percentage was exceeded only by those high schools with more than 200 graduates.

Holding Power. Table 10 shows the percentage of freshmen who remain in high school until graduation.

TABLE 10. Percent of Freshmen Who Graduate From High School According To Size of Graduation Class

Graduation class size	Percent of freshmen graduating in four years
10 - 29	60.1
30 - 59	62.8
60 - 99	67.1
100 - 199	67.7
200 - 299	74.8
300 - Up	74.2

Source: Holding Power and Graduates, Kentucky Department of Education, 1972.

The percentage of entering freshmen who graduated increased as the size of the graduating class increased. This is true nationally, as well as in Kentucky, and perhaps can be attributed to the increased number of course offerings and options for the students in larger high schools. This factor is frequently cited as a major reason for school district reorganization; creation of larger districts can provide sufficient students to create comprehensive high schools.

One caution should be noted in the interpretation of the above table - the effects of in-migration and out-migration may not have been taken into account in the study and the findings can therefore not be generalized to apply to all districts.

Training of the Teaching Staff. Data pertaining to the degree status of Kentucky teachers were analyzed according to district enrollments. Table 11 shows the percent of teachers above Rank II (Master's degree or higher). Little relationship appears to exist between district size and the percentage of teachers with a master's degree or a higher degree.

TABLE 11. Percentage of Kentucky Teaching Staff Above Rank II, By Selected Enrollment Categories

Enrollment	Number of districts	Percentage range	Median percentage
1 - 250	3	0.0 - 20.0	11.1
501 - 750	9	17.9 - 35.6	28.9
1,001 - 1,500	24	7.4 - 46.5	23.2
2,001 - 2,500	20	12.7 - 36.0	24.6
3,001 - 3,500	18	14.4 - 34.0	19.8
4,001 - 5,000	11	10.7 - 41.7	22.9
5,001 - 6,000	12	12.7 - 52.5	22.5
8,001 - 16,000	8	17.9 - 36.9	25.1
48,001 - 80,000	1		35.2
80,001 - Up	1		31.8

Source: *Profiles of Kentucky School Districts, 1970-71*, Kentucky Department of Education, March, 1972.

Table 12 shows the percentage of teaching staff below Rank III, or with less than a bachelor's degree. There appears to be little relationship between the percentage of teachers who have not earned a bachelor's degree and district size.

TABLE 12. Percentage of Kentucky Teaching Staff Below Rank III, By Selected Enrollment Categories

Enrollment	Number of districts	Percentage range	Median percentage
1 - 250	3	0.00 - 30.00	0.00
501 - 750	9	0.00 - 3.89	0.00
1,001 - 1,500	24	0.00 - 9.43	1.57
2,001 - 2,500	20	0.00 - 9.09	1.05
3,001 - 3,500	18	0.00 - 7.23	1.19
4,001 - 5,000	11	0.00 - 4.18	.95
5,001 - 6,000	12	0.00 - 7.76	.86
8.001 - 16,000	8	0.25 - 8.52	1.98
48,001 - 80,000	1		3.56
80.001 - Up	1		.42

Source: Profiles of Kentucky School Districts, 1970-71, Kentucky Department of Education, March, 1972.

Intermediate Service Units

Kentucky is presently planning to organize regional service units to provide educational programs and services which are not feasible for most individual districts. Among the activities which are logical for intermediate service units are electronic data processing, in-service training, cooperative purchasing, media centers, consultant services, testing programs, and programs for vocational and exceptional pupils.

Only very large districts can efficiently operate sophisticated activities such as those mentioned above. Creation of intermediate service units does not eliminate the need for merger of districts with inadequate enrollment; the programs and services of intermediate units are supplementary and designed to enrich adequate local school programs.

Finance and Reorganization

State studies of local school district reorganization have found invariably that cause and effect relationships exist between finance and organization. State support formulas often encourage merger of school districts and occasionally deter reorganization; however, in many states, as in Kentucky, the formulas may ignore the need for adequate organization of local school districts.

Incentives. Strong incentives for local district reorganization may be found in the formula for distribution of general school aid in Illinois. Districts which do not operate high schools are penalized; they are required to levy a higher rate for the local share of the foundation program. In effect the required local share of the foundation program required of elementary (only) districts is 38 percent higher than if they operated a high school. Consequently, state support is decreased by an identical amount. In addition, districts enrolling from 10,000 to 19,999 pupils are given a bonus; four percent is added to the number of allotted units for state support. Districts having an enrollment of over 20,000 receive a bonus allotment of eight percent.

Although the financial support of Kentucky schools is discussed in another chapter of this report, Kentucky should study the state support formula now in effect to determine if it tends to perpetuate inadequate districts.

Assessed valuation. State school support in Kentucky as well as local tax rates is directly affected by local assessed valuation. Valuations per pupil are shown in Table 13. The state average in 1970-71 was slightly less than $30,000 per pupil. The 33 school districts having enrollments of less than 1,000 pupils had a median assessed valuation which was 15 percent below the state average. Although a few had high valuations; most had valuations per pupil below the state average.

Analysis of data for these 33 districts revealed several significant facts. Thirty of the 70 independent school districts were in this group. A few of these districts were virtual "tax islands" effectively removing their tax base from that of the county. In other instances the reverse was true; the small independent district, at "poverty level," was surrounded by a county which isolated property tax wealth from the isolated independent district. Neither of the above situations is fiscally sound.

Local taxation and foundation program support cannot operate equitably when the above conditions are condoned. Throughout this section of the report inequities in finance will be seen repeatedly. Many of these

TABLE 13. Assessed Valuation Per Pupil In ADA, 1970-71, According To Enrollment of Kentucky School Districts

Enrollment	Valuation per pupil			No. of districts
	Low	Median	High	
1 - 1,000	$12,326	$25,363	$85,135	33
1,001 - 2,000	10,160	31,449	59,924	47
2,001 - 2,500	14,222	30,862	43,078	20
2,501 - 5,000	7,796	28,012	58,456	58
5,001 - 8,000	8,485	28,252	42,746	20
8,001 - 16,000	10,096	24,775	44,356	3
16,001 - 32,000	16,490	16,490	16,490	1
32,001 - 48,000	43,951	43,951	43,951	1
Over 48,001	36,926	36,926	41,919	2
				190
Average	$17,828	$29,564	$48,451	
Median	$12,326	$28,252	$43,951	

Source: Public School Financial Analysis, 1970-71, Kentucky Department of Education, November, 1971.

inequities result, in part, from violation of a basic rule of school organization. Stated as a criterion - the state should not condone the perpetuation of districts with inadequate enrollment.

Efficiency. A number of financial implications are seen in studies of local school district organization in most states. District size is related to administrative costs, instructional costs, transportation costs, and operating costs. Local organization affects financial ability, debt limits, tax bases and school property tax rates. District organization, as mentioned previously, may affect state school support in some states.

The organization of local attendance units within school districts also has financial implications. Operation of many small schools within a school district often results in unduly high costs for current operation; if high costs do not result, restricted program opportunities for pupils probably prevail.

Selected financial data for Kentucky school districts classified by type of organization and by enrollment categories may be seen in the following tables.

The relationships between administrative costs and enrollment for Kentucky school districts in 1970-71 are shown in Table 14. Average administrative costs for districts enrolling fewer than 1,000 pupils ranged from $25.83 per pupil to $75.17 per pupil. The state average of $15.61 per pupil was exceeded by all districts in enrollment classifications lower than 2,500 pupils. Larger school districts, with the exception of Louisville and Fayette County, had still lower per pupil costs.

TABLE 14. Per Pupil Costs for Administration According to Enrollment of Kentucky School Districts

Enrollment	No. of districts	Average administrative cost per pupil	Median administrative cost per pupil	Deviation from state median of $16.67
1 - 250	3	$75.17	$82.87	$+66.20
251 - 500	9	48.96	44.03	+27.36
501 - 750	9	37.42	37.57	+20.90
751 - 1,000	12	25.81	26.42	+ 9.75
1,001 - 1,500	24	21.93	21.24	+ 4.57
1,501 - 2,000	23	19.92	19.30	+ 2.63
2,001 - 2,500	20	16.10	15.96	- .71
2,501 - 3,000	24	14.27	13.86	- 2.81
3,001 - 3,500	18	15.25	14.86	- 1.81
3,501 - 4,000	5	12.35	12.29	- 4.38
4,001 - 5,000	11	12.49	12.00	- 4.67
5,001 - 6,000	12	12.36	11.75	- 4.92
6,001 - 7,000	5	11.70	10.19	- 6.48
7,001 - 8,000	3	14.78	11.79	- 4.88
8,001 - 16,000	8	11.40	10.80	- 5.87
16,001 - 32,000	1	8.08	8.08	- 8.59
32,001 - 48,000	1	16.11	16.11	- .56
48,001 - 80,000	1	26.96	26.96	+10.29
80,001 - 112,000	1	13.35	13.35	- 3.32

Source: Profiles of Kentucky Public Schools, 1970-71, Kentucky Department of Education, March, 1972.

Table 15 shows that the median cost per pupil for administration was more than 50 percent higher in independent than in county school districts.

TABLE 15. Cost Per Pupil For Administration, 1970-71, For Independent and County School Districts

District	Cost per pupil			
	Low	Median	High	Average
72 Independent districts	$18.97	$23.64	$31.96	$28.24
120 County districts	11.23	14.08	17.50	15.04
192 All districts	12.48	16.67	23.48	20.05

Source: Profiles of Kentucky Public Schools, 1970-71, Kentucky Department of Education, March, 1972.

As shown in Table 16, Kentucky school districts enrolling fewer than 2,500 pupils in 1970-71 could have saved more than three quarters of a million dollars in administrative costs during the school year if they had operated at the state average cost of $15.61 per pupil for administration. In districts with small enrollments the administrative costs appeared to be unduly high.

Current expenditure. Many expenditure categories can be compared for school districts categorized by type or enrollment. In the following discussion attention will be given to current expenditure which is the predominant item in a school budget, including, as it does, almost all functional items other than capital outlay and debt service.

TABLE 16. Average Administrative Costs Per Pupil for Districts with an Enrollment of 2,500 or Less and Probable Savings if State Averages Were Obtained by Those Districts

Enrollment size	Number of districts	Average administrative cost per pupil	State average administrative cost per pupil for all districts	Probable savings per pupil	Total enrollment	Total probable savings
1 - 250	3	$75.17	$15.61	$59.56	533	$ 31,745
251 - 500	9	48.96	15.61	33.35	3,494	116,524
501 - 750	10	37.42	15.61	21.81	6,140	133,913
751 - 1,000	8	25.81	15.61	10.20	7,190	73,338
1,001 - 1,500	26	21.93	15.61	6.32	31,973	202,069
1,501 - 2,000	24	19.92	15.61	4.31	42,476	183,071
2,001 - 2,500	17	16.10	15.61	.49	37,899	18,570
Total	97					$759,230

Source: *Profiles of Kentucky Public Schools, 1970-71*, Kentucky Department of Education, March, 1972.

The current expenditure level per pupil in 1970-71 for all Kentucky school districts is shown in Table 17. The median current expenditure decreased for each enrollment category until an enrollment of 5,000 was reached; at this point the median current expenditure increased - particularly in school districts enrolling more than 10,000 pupils.

TABLE 17. Current Expenditure Per Pupil In Average Daily Attendance, Kentucky School Districts, 1970-71

Enrollment	Number	Median	Range
0 - 999	33	$482	$397 - $855
1,000 - 1,999	47	489	363 - 584
2,000 - 2,999	44	473	381 - 624
3,000 - 3,999	23	464	390 - 557
4,000 - 4,999	11	451	427 - 515
5,000 - 9,999	26	462	416 - 680
10,000 - Up	6	502	438 - 703
Total	190	$479	$363 - $855

Hi low ratio 2.36

Source: Profiles of Kentucky Public Schools, 1970-71, Kentucky Department of Education, March, 1972.

Current expenditure per pupil in independent school districts as shown in Table 18 was lowest for districts enrolling from 3,000 to 3,999 pupils, a point at which peak efficiency was reached. Districts which had smaller enrollments spent more per pupil, as much as $34 per pupil more. Districts which enrolled 4,000 or more pupils spent considerably more per pupil. This is not unusual, since these included urban areas; such areas invariably have problems resulting from a concentration of disadvantaged pupils. They also tend to have higher expenditures because of their proximity to densely settled metropolitan areas.

TABLE 18. Current Expenditure Per Pupil In Average Daily Attendance, Kentucky Independent School Districts, 1970-71

Enrollment	Number	Median	Range
0 - 999	30	$478	$397 - $855
1,000 - 1,999	23	488	363 - 585
2,000 - 2,999	8	473	420 - 624
3,000 - 3,999	2	454	450 - 458
4,000 - 4,999	1	515	----------
5,000 - 9,999	5	540	520 - 680
10,000 - Up	1	702	----------
Total	70	$481	$363 - $855

Source: Profiles of Kentucky Public Schools, 1970-71, Kentucky Department of Education, March, 1972.

As shown in Table 19, county districts having from 4,000 to 4,999 pupils had the lowest expenditure per pupil; only $447 per pupil was expended, as compared with $515 per pupil in independent districts of the same size.

TABLE 19. Current Expenditure Per Pupil In Kentucky County School Districts, 1970-71

Enrollment	Number	Median	Range
0 - 999	3	$506	$450 - $553
1,000 - 1,999	24	491	397 - 536
2,000 - 2,999	36	473	381 - 532
3,000 - 3,999	21	464	390 - 557
4,000 - 4,999	10	447	427 - 504
5,000 - 9,999	21	455	416 - 621
10,000 - Up	5	446	438 - 603
Total	120	$466	$381 - $621

Hi low ratio - 1.63

Source: *Profiles of Kentucky Public Schools, 1970-71*, Kentucky Department of Education, March, 1972.

The preceding tables indicate that the lowest current expenditure per pupil was in districts which enrolled from 3,000 to 4,999 pupils. If cost was the only criterion, the minimum size for school districts in Kentucky should probably be at this level.

Tax Rates. A school district, when state and federal support and minor sources of revenue have been determined, finds that the residual revenues needed must be obtained from the local property tax. The school tax rate becomes highly visible and can be a source of major concern to local taxpayers and school officials.

Total school tax rates for Kentucky school districts ranged from 27.3 cents to $1.572 per $100 of taxables.

Districts which enrolled fewer than 1,000 pupils and more than 16,000 pupils had the highest median school tax rate. Districts having the lowest median rate (1971-72), as shown in Table 20 were those which enrolled from 2,501 to 5,000 pupils. Their median rate was 47.5 cents per $100 of taxables.

TABLE 20. Total Tax Rate Levied, All Kentucky School Districts, 1971-72

District enrollment	Number of districts	Tax rates in cents per $100		
		Low	Median	High
0 - 1,000	33	28.9	65.5	157.2
1,001 - 2,000	47	31.0	58.4	105.2
2,001 - 2,500	20	33.0	48.0	89.0
2,501 - 5,000	58	30.5	47.5	64.9
5,001 - 8,000	20	27.3	52.6	84.2
8,001 - 16,000	8	40.7	56.1	106.4
16,001 - Up	4	49.4	81.0	83.4
Total	190	27.3	54.7	157.2

Source: Property Tax Statistics, 1971, Kentucky Department of Education, November, 1971.

Tax rates, of course, vary inversely with assessed valuation per pupil, if all other factors are equal. As shown in Table 20, and preceding tables, all other factors are not equal. Inadequate districts, having only a few pupils, tend to have higher costs. These are reflected in higher local tax rates, since local taxes are the eventual source from which revenues must be obtained. In brief, high tax rates tend to parallel unduly high expenditures.

A similar analysis of independent and county school districts reflected the same trend shown in Table 20 for all 190 school districts in 1971-72.

Other compelling conditions, such as geographic location, terrain, road conditions, and demographic patterns indicate that an enrollment of 2,501 - 5,000 pupils is probably an optimum rather than a feasible minimum enrollment for Kentucky school districts. If efficient size were achieved, a considerable savings in current expenditures per pupil in Kentucky school districts might be possible.

Summary of Findings

Following are highlights of the data presented previously in this chapter:

1. The pace of Kentucky district reorganization has been slow, particularly in the last decade.

2. More than half of Kentucky school districts enrolled fewer than 2,500 pupils in 1971-72. Fifty-five of the 70 independent districts had fewer than 2,500 pupils.

3. Five independent districts did not operate high schools.

4. As high school enrollments increased, accreditation ratings by the state improved.

5. Only 119 of 350 public secondary schools had received Southern Association accreditation in 1969-70.

6. As elementary school enrollment increased, state accreditation ratings improved.

7. Even though district enrollment often was sufficient to operate a single high school with a comprehensive program, many small high schools continued to exist.

8. In 1971-72, there were 275 elementary buildings with fewer than 200 pupils and 106 high schools with fewer than 100 students.

9. No discernible relationship existed between district size and teacher-pupil ratio or training of the teaching staff.

10. As high school graduating class increased, the percentage of graduates entering college increased.

11. Larger high schools tended to have greater holding power.

12. Districts with fewer than 1,000 pupils had a median assessed valuation per pupil which was 15 percent below the state average. Thirty of these 33 districts were independent districts.

13. Average administrative cost per pupil for small districts (those with fewer than 2,500 pupils) was significantly higher than the state average. Median costs for independent districts was 50 percent higher than in county districts.

14. More than $750,000 could have been saved if the districts enrolling less than 2,500 pupils had operated at the state average per pupil cost for administration.

15. Peak efficiency, in terms of current expenditure per pupil,

was reached when enrollment was between 4,000 and 4,999 pupils. Smaller districts spent as much as $400 per pupil more than the median current expenditure of $451 for districts with 4,000-4,999 pupils.

16. Districts which enrolled fewer than 1,000 pupils and more than 16,000 pupils had the highest median school tax rate. Lowest median rates were for districts with 2,501 to 5,000 pupils.

Implications

After a careful study of the enrollments in Kentucky school districts the authors of this report concluded that a minimum of 1,500 pupils in a school district was inadequate to provide the educational programs and services needed by Kentucky school children. Optimum enrollments of from 3,500 or more as suggested in a number of recent reorganization studies, and as indicated by some of the financial analyses in this report, are likewise inappropriate as a minimum enrollment criterion for Kentucky school districts because of population sparsity, terrain, and associated conditions.

A minimum enrollment of 2,500 pupils in grades K through 12 seemed most appropriate for consideration as a guideline for Kentucky school districts. This enrollment would be sufficient to insure that each school district in Kentucky would have sufficient pupils to operate a senior high school (grades 9 through 12) which could enroll from 700 to 800 pupils, sufficient to operate a comprehensive educational program and supply educational services at reasonable cost.

Recommendations

A variety of approaches could be used to resolve the problems associated with small and inadequate school districts. In view of current conditions in Kentucky the following two alternative recommendations are presented for consideration.

Alternative One. Rather than prescribing mandatory reorganization of local school districts, the following alternative approach could be selected.

1. All school districts will provide a program of education within the school district which spans grades 1-12.
    a. Districts not currently providing a grade 1-12 program of education shall be merged with the appropriate school district.
    b. The merger of such districts will be in accordance with a plan developed by district boards of education of the affected school districts and upon recommendation of the Superintendent of Public Instruction, approved by the State Board of Education.
    c. The merger of such school districts shall be accomplished on or before July 1, 1975.
    d. In the event that affected local boards of education are unable to reach agreement upon a merger plan, the affected school districts will be merged by the State Board of Education based upon a plan recommended by the Superintendent of Public Education.
2. In independent school districts having fewer than 2,500 pupils in average daily attendance, the county in which they are located and such independent school districts shall form a joint study committee which will formulate a plan for merger of such school districts into proposed new districts.

a. The study committee shall consist of three members appointed by the county board of education who are residents of the county school district, three members appointed by the independent board of education who are residents of the independent school district, three members appointed by the Superintendent of Public Instruction who are residents of the independent school district, and three members appointed by the Superintendent who are residents of the county district.

b. In counties with more than one such independent school, representation shall be the same as in point "a" and a multi-district committee will be formed to develop recommendations for merger of the affected school districts.

c. Study committees formed under this legislation shall be organized and functioning no later than September 1, 1974.

d. The plan for merger and the proposed district organization shall take into consideration but not be limited to:

(1) The nature of program offerings among the various schools in the districts within the county.

(2) Expenditure patterns by functional category for all school districts within the county.

(3) Projected tax rates based upon previous years' expenditures and projected assessed valuations of property.

(4) Proposed composition of the interim school board

(5) Proposed school board member districts

(6) Procedure for selecting the superintendent of the proposed district

(7) Procedures for assuming assets and liabilities of previously existing school districts

e. The Superintendent of Public Instruction will provide technical assistance to the study committees.

f. By May 1, 1975, the study committees will have adopted a plan for merger of affected school districts.

g. During the 60 days following May 1, 1975, at least two hearings, with 30 day prior public notice, will be held in each of the affected school districts.

h. On or before July 1, 1975, the study committees will submit the proposed merger plan to the State Superintendent of Public Instruction for his review and recommendation for approval to the State Board Of Education. Such action by the State Board shall be taken on or before September 1, 1975.

i. The State Board of Education will have the authority upon the recommendation of the Superintendent of Public Instruction to revise the plan to conform with existing Kentucky Revised Statutes and State Board Regulations.

j. The question of merger of the affected school districts will be put upon the ballot of the general election of 1975, and will be voted upon by the voters of the independent school district. A simple majority of the valid ballots cast on the issue in the affirmative for merger shall prevail and cause merger to be effected in accordance with the plan.

k. In counties having more than one affected independent district, the plan shall be for all districts and voted upon as a single issue.

l. During the period between September 1, 1975 and the general election, the county school district shall widely disseminate the provisions of the plan.

m. Affirmative votes for merger will be implemented no later than July 1, 1976.

3. At the session of the Kentucky General Assembly following the enactment of the legislation, the State Board of Education shall present a progress report to the General Assembly.

4. No provisions of this legislation shall in any way prevent voluntary school district mergers by local boards of education which are legal under currently existing legislation, and no provisions of this legislation shall nullify current statutes which permit the dissolution of school districts.

Alternative Two. A minimum enrollment of 2,500 pupils in grades K-12 should be the guideline for Kentucky school districts. This enrollment should be sufficient to assure that each school district would have sufficient pupils to operate a senior high school (grades 9-12) which would enroll from 700 to 800 pupils; this number is sufficiently large to permit the school to operate a comprehensive educational program and supply educational services at a reasonable cost. To implement this alternative the following detailed steps should be taken:

a. Independent districts which do not enroll 2,500 pupils by the fall of 1975 should be merged with the appropriate county district. If, after all such mergers a county district does not enroll 2,500 pupils, then the county and independent district should also be merged.

b. Studies should be initiated in areas of the state which embrace counties still having fewer than 2,500 pupils after implementation of the required mergers outlined in "a".

c. Each school district meeting the 2,500 enrollment criterion should conduct a local study of its internal organization to develop solutions to the problem of continued operation of school attendance centers with small enrollments.

d. Plans for the development of multi-district regional service units should be continued and attention given to the determination of logical programs and services to be provided by such units.

e. The present policy of permitting voluntary studies to determine merger or consolidation feasibility should be continued.

TABLE A-1. Independent Districts With Less Than 2,500 Enrollment (Based Upon 1971-1972 Enrollments)

Independent District	Enrollment (1971-1972)	County
Scottsville	568	Allen
Caverna	1,091	Barren
Pineville	622	Bell
Walton Verona	837	Boone
Paris	1,579	Bourbon
Catlettsburg	776	Boyd
Fairview	1,223	
Augusta	346	Bracken
Jackson	375	Breathitt
Cloverport	327	Breckenridge
Murray	1,920	Calloway
Bellevue	1,526	Campbell
Dayton	1,992	
Silver Grove	474	
South Gate	206	
Frankfort	1,072	Franklin
Fulton	674	Fulton
Williamstown	547	Grant
Mayfield	2,219	Graves
Leitchfield	1,247	Grayson
Raceland	977	Greenup
West Point	274	Hardin
Harlan	1,343	Harlan
Lynch	509	
Eminence	520	Henry
Dawson Springs	586	Hopkins
Earlington	635	
Anchorage	308	Jefferson
Paintsville	1,004	Johnson
Beechwood	825	Kenton
Ludlow	1,108	

TABLE A-1 (Continued)

Independent District	Enrollment (1971-1972)	County
Barbourville	595	Knox
E. Bernstadt	300	Laurel
Jenkins	1,124	Letcher
Russellville	1,699	Logan
Berea	1,047	Madison
Richmond	1,343	
Maysville	1,267	Mason
Burgin	472	Mercer
Harrodsburg	1,350	
Mt. Sterling	1,105	Montgomery
Central City	996	Muhlenberg
Greenville	971	
Bardstown	1,674	Nelson
Hazard	1,712	Perry
Pikeville	1,328	Pike
Science Hill	188	Pulaski
Georgetown	985	Scott
Shelbyville	1,861	Shelby
Campbellsville	1,716	Taylor
Monticello	677	Wayne
Providence	871	Webster
Corbin	1,608	Whitley
Williamsburg	848	

Source: Report PN-70599R, 1971-72 Enrollments, Kentucky Department of Education, September 28, 1972.

TABLE A-2. **Counties With Less Than 2,500 Pupils in 1971-72** (Includes County District Plus Independent Districts Within County)

County	Total enrollment 1971-72
Anderson	2,223
Ballard	1,828
Bath	2,167
Bracken	1,601
Butler	2,346
Carlisle	1,133
Carroll	1,986
Clinton	1,924
Crittenden	1,839
Cumberland	1,546
Edmonson	2,061
Elliott	1,508
Fulton	2,276
Gallatin	1,030
Garrard	2,084
Green	2,153
Hancock	1,526
Henry	2,319
Hickman	1,422
Lee	1,929
Livingston	1,633
Lyon	978
McLean	2,097
Menitee	1,087
Metcalfe	1,849
Nicholas	1,375
Owen	1,706
Owsley	1,162
Powell	2,246
Robertson	493
Spencer	1,349
Todd	2,460
Trigg	2,047
Trimble	1,346
Washington	2,381

Source: Report PN-70599R, 1971-72 Enrollments, Kentucky Department of Education, September 28, 1972.

NOTES

[1] National Education Association, Estimates of School Statistics, 1971-72, Research Division, Washington, D.C., 1971.

[2] The Great Plains School District Organization Project, Planning for School District Organization, The Project, Lincoln, Nebraska, June, 1968, Chapter IX.

[3] Legislative Research Commission, School District Reorganization: A Move Toward Efficiency, Research Report No. 65, prepared by Jim Peyton, Frankfort, Kentucky, December, 1971.

[4] Ibid., p. 1.

[5] Faber, Charles, F., "The Size of a School District," Phi Delta Kappan, September, 1966; Turner, Harold E., "What is the Optimum District for Curriculum Development?" Peabody Journal of Education, May 19, 1969.

[6] National Education Association, op. cit., p. 26.

[7] Peyton, op. cit., pp. 3-5; Conant, James B., The American High School Today, McGraw-Hill, New York, 1959.

[8] American Association of School Administrators, School District Organization, The Association, Washington, D.C., 1958, Chapter X.

[9] Holding Power and Graduates, Kentucky State Department of Education, February 1971-72.

[10] Conant, James B., The American High School Today, McGraw-Hill Book Co., New York, November, 1958, 140 pp.

[11] Maxey, E. J., and Thumos, D. R., Selected Comparisons of Teacher and Curriculum Characteristics Related to Educational Innovation for the Great Plains, University of Iowa, Iowa City, Iowa, 1967, 124 pp.

[12] Manatt, Richard, and Netusil, Anton J., A Study of Administrative Costs in Selected School Districts, Lincoln, Nebraska, 1968.

[13] Kentucky State Plan for Accrediting Secondary Schools, Kentucky Department of Education, January, 1970, p. 11.

[14] Education in Kentucky; A Legacy of Unkept Promises, National Education Association, May, 1971, p. 65.

[15] Holding Power and Graduates, Kentucky Department of Education, 1972.

SCHOOL DISTRICT PRODUCTIVITY IN KENTUCKY*

Research efforts in the past decade have focused on variation in school performance (output) to allocate fiscal and dollar resources to those inputs that appear to make a difference in school district productivity.[1] The research procedures used in these studies relied on multiple regression analysis to predict a single performance criterion (e.g., achievement, dropout rate, etc.) from combinations of in-school, socioeconomic, and community variables. The major conclusions from these studies have not resolved the conflict surrounding the extent that socioeconomic and community characteristics are interrelated with in-school factors as they relate to student performance.

Although studies undertaken to re-analyze data used in these studies, plus subsequent studies using similar regression analysis, provided some concensus concerning the correlates to achievement, the variables identified merely told school leaders which characteristics best explain why their schools are performing as they do. A more important question that the school administrator must answer is overlooked: If local measures of in-school, socioeconomic, and community variables are compared with similar characteristics of those districts considered as high or low productive, which group is the local district most likely to enter?

To determine this requires the prediction of a dichotomous performance criterion, high or low productivity, rather than a single achievement criterion. The complex phenomena surrounding the interrelated socioeconomic and community variables acting in concert with in-school variables suggest that school district performance is best measured by a criterion that represents a range or a predefined degree of productivity that allows for variations among districts due to factors school leaders cannot easily control. Therefore, it was the primary concern of this study to examine input measures of school and community variables related to high and low productive school districts in order to identify a combination of variables that best fit a predictive model that will classify school district productivity.

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*This substudy was researched and written by David DeRuzzo, former research associate with the National Educational Finance Project and currently budget director for Palm Beach County Schools, Florida.

The Problem of the Study

It was the problem of this study to identify variables which differentiate between high or low productive school districts. Specifically this investigation identified (1) high and low productive school districts in Kentucky from the relationship between district current expenditures per pupil and district mean achievement on a standardized test administered to one grade level in participating school districts; and (2) the best combination of socioeconomic, community, and in-school variables in a predictive model that would permit assignment of school districts as either high or low productive on the basis of the observed criterion established by the relationship between expenditures and achievement.

Procedures

Identification of High and Low Productive School Districts

Simple regression analysis was performed to identify high and low productive districts from 1970-71 current expenditures per pupil (expenses for transportation not included) and mean reading grade equivalent for the fourth grade on the comprehensive section of the California Achievement Test Battery. Test data for thirty-eight districts participating in the spring 1971 testing period were furnished by the Division of Guidance Services. Current expenditures were taken from Profiles of Kentucky Public Schools, 1970-71.

Figure 1 illustrates the school districts located above and below the regression line predicting achievement from expenditures. The fourteen districts above the line were identified as high productive, group (H), and the twenty-four below the line as low productive, group (L). From Table 1, it can be seen that any district with a positive residual (the difference between actual achievement and predicted achievement) is located in group (H), and, conversely, districts with a negative residual are in group (L).

Selected Predictor Variables

Productivity or output in this study was defined by the dichotomous criterion variable, group (H) and group (L). Input or the predictor variables of this criterion were raw scores calculated for each school district in groups (H) and (L). The sixteen predictor variables are presented in Table 2. Variables X_1 through X_8 are considered socioeconomic

TABLE 1. Identification of Local School District Productivity in Kentucky

Group Number	District	Current Expenditures PP ADA	Achievement	Predicted Achievement	Residual
		High Productivity			
H_1	Caverna Ind	411.00	4.70	4.39	0.31
H_2	Calloway Co	374.00	5.00	4.24	0.76
H_3	Murray Ind	438.00	6.00	4.50	1.50
H_4	Crittenden Co	422.00	4.60	4.43	0.17
H_5	Gallatin Co.	428.00	4.50	4.46	0.04
H_6	Grant Co	439.00	4.70	4.50	0.20
H_7	Green Co	441.00	5.30	4.51	0.79
H_8	Henry Co	476.00	5.20	4.65	0.55
H_9	Jassimine Co	365.00	4.70	4.21	0.49
H_{10}	Laurel Co	383.00	4.50	4.28	0.22
H_{11}	Livingston Co	404.00	4.40	4.36	0.04
H_{12}	Madison Co	397.00	6.60	4.33	2.27
H_{13}	McCracken Co	499.00	5.30	4.74	0.56
H_{14}	Rowan Co	426.00	4.70	4.45	0.25
		Low Productivity			
L_1	Bath Co	412.00	4.20	4.39	-0.19
L_2	Bell Co	414.00	4.10	4.40	-0.30
L_3	Breathitt Co	382.00	4.10	4.27	-0.17
L_4	Bullit Co	411.00	4.30	4.39	-0.09
L_5	Dayton Ind	330.00	3.90	4.07	-0.17
L_6	Carlisle Co	460.00	4.50	4.59	-0.09
L_7	Clay Co	380.00	4.00	4.27	-0.27
L_8	Edmonson Co	382.00	3.70	4.27	-0.57
L_9	Hancock Co	441.00	4.30	4.51	-0.21
L_{10}	Harlan Co	412.00	3.60	4.39	-0.79
L_{11}	Hart Co	375.00	4.10	4.25	-0.15
L_{12}	Eminence Ind	475.00	3.70	4.65	-0.95
L_{13}	Jackson Co	422.00	4.00	4.43	-0.43
L_{14}	Knox Co	408.00	3.70	4.38	-0.68
L_{15}	Lee Co	443.00	4.40	4.52	-0.12
L_{16}	Jenkins Ind	393.00	4.30	4.32	-0.02
L_{17}	Nicholas Co	456.00	4.40	4.57	-0.11
L_{18}	Perry Co	392.00	3.40	4.31	-0.91
L_{19}	Robertson Co	457.00	4.30	4.57	-0.27
L_{20}	Scott Co	466.00	4.30	4.61	-0.31
L_{21}	Union Co	506.00	4.50	4.77	-0.27
L_{22}	Warren Co	427.00	4.40	4.45	-0.05
L_{23}	Webster Co	390.00	4.20	4.31	-0.11
L_{24}	Whitley Co	379.00	3.60	4.26	-0.66

TABLE 2. Independent Variables Selected to Predict Local School District Productivity

Number	Variable Title	Variable Description
		Socioeconomic and Community Characteristics
X_1	Income under $3,000	Percent of federal income tax returns with annual income of less than $3,000 in 1966.[a]
X_2	Income over $10,000	Percent of federal income tax returns with annual income of greater than $10,000 in 1966.
X_3	Economically Deprived	Percent of pupils receiving instruction in programs funded under Title I of the Elementary and Secondary Education Act (ESEA).
X_4	Minority Enrollment	Percent of student enrollment that is non-white.
X_5	College Entrance	Percent of graduates entering college.
X_6	Size of School District	Total number of pupils enrolled from 1970-71 attendance reports.
X_7	Student Mobility	Percent of increase or decrease in student enrollment between 1966-67 and 1970-71.
X_8	Local Fiscal Effort	Ratio of local revenue per pupil ADA to the assessed property value per pupil.
		In-School Characteristics
X_9	Beginning Teacher Salary	Annual salary of beginning teacher with a 4-year degree having no previous teaching experience.
X_{10}	Average Teacher Salary	Average annual salary paid to certificated classroom teacher.

TABLE 2. (continued)

Number	Variable Title	Variable Description
X_{11}	Expenses for Instruction	Total expenditures funded for instruction (not including Title I and II of ESEA) divided by pupil ADA.
X_{12}	Expenses for Transportation	Percent of total current expenditures funded for transportation.
X_{13}	Expenses for Administration	Total expenditures funded for administration divided by pupils in ADA.
X_{14}	Staff Preparation	Percent of instructional staff with less than four years training (less than rank III).
X_{15}	Advanced Certification	Percent of instructional staff with a master's degree (equivalent certification) or higher.
X_{16}	Pupil-Teacher Ratio	Number of pupils enrolled divided by the total number of classroom teachers in the school district.

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[a] All data were collected for the 1970-71 school year, except where dates are noted in the variable description.

and community variables. They are characteristic of the students, the families, and the community which the school district serves. Variables X_9 through X_{16} are in-school characteristics, having both quantitative and qualitative influence upon school performance. Many of these variables were identified as significant predictors of high and low productivity in previous research efforts conducted by the National Educational Finance Project.[2] Income data were calculated from Personal Income by School Districts in the United States.[3] Data for the remaining variables were compiled from Profiles of Kentucky Public Schools, 1970-71, Kentucky School Enrollments, 1970-71, and other source documents provided by the Division of Statistical Research.

Identification of Variables to Predict High and Low Productive School Districts

To identify variables that will predict to which group, (H) or (L), a district is most likely to belong requires a statistical procedure called stepwise discriminant analysis. A multivariate analysis was performed with data categorized by school districts and the districts were designated as belonging to group (H) or (L). Operating in a stepwise manner, the statistical procedure provided a linear discriminant function of the best combination of variables that permitted maximum classification of school districts into groups. That is, at each step, the procedure entered a variable into a set of prediction equations, one for predicting high productivity and the other for predicting low productivity. The most potent mix of discriminating variables was observed in the predictive model:

$$H = K + b_1X_1 + b_2X_2 \ldots + b_nX_n$$

$$L = K + b_1X_1 + b_2X_2 \ldots + b_nX_n$$

where: H represented a prediction of high productivity;

L represented a prediction of low productivity;

K represented a specific constant established by the discriminant analysis to allow for the differences in group means to be maximal relative to the score spread in each group; and

$b_1X_1 + b_2X_2 + \ldots + b_nX_n$ represented a set of weighted measures ($b_1, b_2, \ldots b_n$) of socioeconomic, community, and in-school predictor variables ($X_1, X_2, \ldots X_n$).

The ability of the discriminant function to assign districts to group (H) or (L) was determined by the percentage of accurately classified districts. District raw scores for the variables in the predictive model were subjected to calculations using the discriminating weights in each equation. The calculated figure for (H) or (L), was the value for the discriminant function. Whichever was smaller, (H) or (L) was the prediction of high or low productivity. The number of accurately classified districts is the sum of the previously identified (observed) districts in group (H) that were classified in group (H) and the number previously observed in group (L) that were classified in group (L). The number accurately classified divided by the thirty-eight districts in the sample represented the percent accurately classified.

The efficiency of the prediction equation was determined by calculating the tetrachoric correlation coefficient, r_{tet}. The r_{tet} correlation coefficient is the correlation between the previously identified group membership and the ability of the discriminant functions to predict productivity.[4] When r_{tet} is squared, the efficiency of the discriminant function can be expressed as the percent of variance accounted for by the variables included in the prediction equation.

Review of Related Literature and Research

The review of related literature and research focuses on the selected criterion and predictor variables used in the research design of this study. The criterion variables were the measures of output, or the dependent variables in both the regression analysis and the discriminant analysis phases of the study. The predictor variables or the independent variables are considered input variables. In the regression analysis phase, achievement was the output variable and current expense was the input variable. In the discriminant analysis phase, the identified groups, high and low productive school districts,were considered as educational output and the socioeconomic, community, and in-school variables were measures of input into the educational process. This review is organized into the two interrelated areas, measuring output and measures of inputs.

Measuring Output

School performance as a measure of educational output has undergone a change in definition. Before the 1950's adaptability was used to define educational performance. Later, "holding power" (or dropout rate")and student achievement became criteria for measuring school performance.[5] The complexity of this assessment process suggests that measures of achievement gains should include not only academic achievement, but social competence, citizenship, responsibility, judgment, self-confidence, creativeness, and so on.[6]

Thomas in 1962 was one of the first to establish that the measures of outcome in education are related to inputs. Using test scores from an achievement battery as a measure of short-term output, Thomas hypothesized that levels of outcome in education were related to resources used such as characteristics of the home, school, and community.[7] In 1971, Thomas said in his book The Productive School,

> Once we are willing to accept the notion that education is produced, we can talk about alternative methods of production. The acceptance of the notion that there are alternative production methods leads to an acceptance of resource allocation as a critical responsibility of administration.[8]

Benson studied the relationship between selected inputs and outputs. He proposed a decision procedure using feedback from achievement scores as a partial basis for the allocation of resources to low achievement school districts.[9] Burkhead examined correlates of a large number of school and non-school variables with performance by high school pupils on intelligence and verbal reading tests.[10]

Coleman used verbal ability test scores to measure variation in achievement between school districts and regions as well as student differences within schools. Using achievement test scores, he and his associates measured differences in educational opportunity between majority and minority pupils. The study measured inequality of opportunity from the increased differences between majority and minority groups as they progress from grade 1 to grade 12. The researchers implied that it is the increased difference in achievement at grade 12 that is, in effect, the degree of inequality of opportunity.[11]

LaVigne tested a research design that developed "indicators of quality" from elementary school achievement as the criterion measure of quality performance. His study compared actual achievement subtest scores of secondary pupils with those scores predicted from group intelligence test scores. Using the differences or residual score between actual achievement and its predictions as the output criterion, he studied socioeconomic and in-school correlates with this output criterion. He concluded that socioeconomic variables were significantly correlated with the criterion scores, and in some instances staff age and staff training also had interesting correlation patterns.[12]

Studies discussed in this review have used achievement test data to assay quality in public education. Reading ability has been the subject of much concern in reports attempting to assess the importance of reading as a tool for success in school as well as for entrance into the work world. Authorities generally agree that fourth grade reading ability is the minimum essential skill to succeed in further schooling and vocational endeavors.[13]

Strang discussed the impact of pupil reading deficiencies upon educational potentialities and social adjustment. She said, "Reading proficiency is the royal road to knowledge. It is essential to success in all subjects" (pp. 4-7). Her conclusions from a review of studies that correlated reading ability with success in school were, "A very large percentage of the poor readers who left, as well as the poor readers who remained in school, had potential reading ability. . . . The average dropout is retarded in reading two years or more" (p. 6).

Since reading ability affects successful performance in school as well as social behavior, it seems reasonable to assume that reading test scores correlate with general achievement. Harris said, "Reading is not one skill, but a larger number of interrelated skills which develop over a period of many years."[14]

In summary, school performance--using pupil achievement as a criterion measure of output--has been an area of considerable concern to educational researchers. Pupil achievement, despite its limitations in assessing both short-term and long-range outputs, has been correlated with school expenditures, school characteristics, socioeconomic status of pupils, and other community variables that represent the environment surrounding the student. Reading test results, in particular, appear to be the best correlate with pupil success both in school and as a productive member of society.

Measures of Inputs

Expenditures as a measure of input were used in the first part of this study to determine their relationship to school district achievement as a measure of output. The second part of the study was an attempt to identify, define, and measure input correlates with the output criterion, high or low productivity. This section of the review will consider inputs for both phases. Generally, studies have categorized input variables to be considered into two broad areas: socioeconomic and community characteristics surrounding the student and in-school characteristics.

From conclusions drawn from studies which correlated the relationship between expenditures and quality education, there appear to be conflicting findings as to the significance of expenditures as an input. Johns and Morphet said, "From a review of numerous studies, there is a strong relationship between expenditures and the quality of education."[15]

Osburn concluded that expenditure per pupil had a significant effect on the quality of education.[16] However, Lyle, in a comprehensive survey of achievement determinants used in input-output studies, warned that there are sufficient studies that refute the commonly held belief that per pupil expenditure is the key determinant of pupil achievement (p. 5).

One study cited by Lyle was the program in the New York City school system in 1964-65. To improve reading, an allocation of $425 in excess of per pupil expenditure was made to provide an increased mixture of services to reduce class size (p. 17). Lyle concluded from this study,

> It takes a great increase in input to gain a small amount of output and that rather than massive spending increases per se, emphasis should be placed upon input-output studies that yield information on the best combination of services. (p. 12)

This was consistent with the findings made by Thomas, who said that correlations between levels of resources and mean test scores were found, but he concluded that the manner in which money was spent appeared to be more important than the level of expenditures.[17]

Kiesling used a multivariate procedure to study pupils in grades 4-11 and pupils from a full range of social backgrounds. He measured the effect of expenditures, I.Q., socioeconomic class as measured by father's occupation, and several in-school variables upon gains in achievement test scores. He identified six input variables that he believed contributed in part to pupil gains. They were male teacher starting salary, average class size, average number of years teaching experience, number of books in the school library, pupil-teacher ratio, and percent of graduates going on to college.[18]

Benson's study involved 249 elementary and unified school districts in California that administered achievement tests to their fifth graders in 1962 (pp. 41-42). He correlated thirty-four school and non-school variables with school performance. There are several findings that are of interest to this study.

1. The home environment of children is strongly related to their performance on both achievement and I.Q. tests.
2. Yet, there does appear to be a set of significant relations between quality of educational provision in school districts and the performance of pupils.
3. We are led to the conclusion that caliber of teachers is the single most important factor.
4. For some types of districts other factors, such as class size and administrative staffing, also appear to be relatively important.
5. In general, in the districts where the income level of citizens (and the educational level as well) is high, schools are more generously provided with resources than they are in districts where the level of household income is low.
6. Thus, it would appear that districts wherein a large proportion of children enter school with environmental advantages are the districts best provided with school resources and that districts in which a relatively large proportion of children enter school under environmental handicaps are least well

> provided with the means through which these handicaps could be overcome (p. 58).

Perhaps the most notable study using socioeconomic variables as inputs was the Coleman study of 600,000 pupils in 5,000 schools. Holding community background variables constant, the research staff found that student attitudes, such as their feelings of control over their own destiny, correlated highly with achievement (pp. 319-25). One of the strongest conclusions of the report was that minority children from homes non-supportive of education, when placed with schoolmates with strong educational background and family support for education, would significantly increase their achievement (pp. 21-22). The report also concluded that the aspirations and motivations of the student body itself will account for much of the variation in achievement within a given school rather than the in-school characteristics surrounding facilities and instructional program. Verbal ability of teachers accounted for more school-to-school variation over grades 1-12 than any other in-school characteristic (p. 317).

In 1968, Bowles and Levin[19] and Mayeske[20] insisted that the Coleman statistical procedures incorrectly held the intercorrelated school and community variables constant. Using multiple regression analysis, each found from their re-analysis of the data from Equality of Educational Opportunity, and without holding any variables constant, that the school factors did in fact account for a significant portion of the school-to-school variation in achievement.

Two studies, though on a much more limited scale, agreed with the Coleman findings. Pierce and Mallory reported that family income, ethnic majority, family mobility, and student transfers appear to predict achievement.[21] Farrar and Purdy found that the size of the school district taken as a variable is also related to achievement.[22]

DeRuzzo and Rose conducted studies to identify variables to predict local school district productivity.[23] Each selected two states that were different in population characteristics, economy, and geographical location. Combinations of socioeconomic, in-school, and community variables which were characteristic of identified high and low productive districts were tested for their ability to predict which group a school is most likely to enter. The predictive ability demonstrated by the weighted variables in sets of discriminant functions indicated a high degree of relationship between the observed results based on the criterion measure and the predicted results based on the prediction equations developed by the statistical procedures used in these studies.

DeRuzzo found that the percent of enrollment that is non-white would classify school district productivity at least 90 percent of the time. In-school variables, expenditures for transportation, beginning and average teacher salaries, and percent of teachers with advanced preparation accurately classified between 70 and 100 percent of the school districts sampled in each state. Local fiscal effort and student mobility were community variables that improved the ability of the discriminant functions to classify school districts (pp. 111-12).

Using a composite function of all variables, Rose found that socioeconomic variables such as the education level of the adult population, the number of pupils in ESEA Title I programs, and the percent of attendance accurately classified 72 percent of the sampled districts in one state. In the other state, socioeconomic variables such as income over $10,000, percent of attendance, percent of enrollment that is non-white, and percent of graduates entering college combined with in-school variables, percent of teachers with less than four years preparation, average class size, advanced preparation and pupil-support personnel ratio, to classify accurately 90 percent of the districts (pp. 83-86).

The research design used by DeRuzzo and Rose is in essence being replicated in this productivity study of school districts in Kentucky.

Presentation and Analysis of the Data

The data presentation and analysis will be organized in terms of the two phases of this study. The aim of the first phase was to identify high and low productive school districts (criterion measure of output) from the relationship between current expenditures per pupil and mean standardized reading achievement test scores. The aim of the second phase was to identify the best combination of socioeconomic, community, and in-school variables in a predictive model that would permit assignment of school districts as either high (H) or low (L) productive on the basis of the observed criterion established in the first phase.

Defining Productivity

The purpose of the first phase was to establish a linear relationship that would predict achievement for a given level of per pupil current expenditures. The regression line is defined as average productivity and those districts whose actual achievement was greater than predicted achievement (located above the line) were identified as high productive. Conversely, those districts whose actual achievement was less than predicted achievement (located below the line) were identified as low productive. Thus, for the purpose of this study, high productivity, or its antithesis, low productivity, was a criterion measure of school district performance as determined by two groups of districts whose actual achievement was located above or below the line representing average productivity.

Identification of the Criterion Groups; High or Low Productive School Districts

The relationship between district current expenditures per pupil and district mean reading achievement was determined by simple regression analysis. A regression equation representing average productivity was in the form of $\hat{Y} = b\ (X) + a$, where $\hat{Y}$ represents the predicted achievement score for a district on the criterion, X represents the level of per pupil current expenditure, and a and b are two constants to allow for variation in scale measurements and the relative rates of change in the variables.

The independent variable, current expenditures per pupil in average daily attendance (ADA), did not include expenses for transportation. This eliminated variations among district expenditures that could be attributed to the differences between the number of transported pupils in county districts and the number transported in independent school districts. The dependent variable, district reading achievement, was in the form of a district mean grade equivalent for the fourth grade.

A sample of 38 school districts was used in the study rather than all 192 districts in the state. The number of districts available for the sample size was dependent on the number of participating districts in a given testing period. The opportunity sample of 38 represented a limitation to the study since not all of the 192 districts had an equal chance of being selected. Nevertheless, the districts did represent a cross section of both county and independent districts; and it can be assumed that the mean achievement ($\bar{Y}=4.42$) of the distribution of reading scores would approach the statewide district mean score if all districts were tested. The mean per pupil current expense for the sampled districts was $418.84. It is assumed that this amount would be closely related to the statewide mean if transportation expenses were deducted from the total current expense of each district. However, the sample size may have affected the correlation between achievement and expenditures. The correlation was 0.26 which could not be considered statistically significant.

The regression line is graphically illustrated in Figure 1. The prediction equation for the linear relationship,

$$\hat{Y} = 0.004X + 2.750,$$

indicated that the expected cost for each four months gain in reading grade placement would require approximately $100 of additional expenditures. It was on the basis of this criterion that the high productive and low productive districts are identified in Table 1. That is, the fourteen high productive districts were those districts whose achievement scores were higher than expected for dollars spent for education; conversely, the twenty-four low productive districts were those districts whose achievement scores were lower than expected for the cost incurred.

Identification of Variables to Predict Local School District Productivity

The independent variables selected to predict local school district productivity are presented in Table 2. The sixteen variables included those identified as significant predictor variables in the prediction equations developed by DeRuzzo and Rose. Variables tested in these studies were selected from the major conclusions cited in the review of the literature summarized in the preceding pages. Some modifications in calculations were needed due to the availability of data in State Department of Education source documents.

The variables selected in Table 2 do not necessarily need to be highly correlated with each other. Discriminant analysis considers the interrelationship among variables (within and between groups) and selects the variable which will improve the predictive ability of the discriminant function. The probability that a variable will provide the largest likelihood of differentiating between high and low productive school districts was the principal factor in selecting significant variables.

Development of the Discriminant Functions

It was the problem of the second phase of the study to identify the variables that will predict high or low productivity. A program for the Biomedical Computer Program Package was selected, BMD07M Stepwise Discriminant Analysis, to develop the discriminant functions.[24]

The variable to enter at each step was determined by the largest F-to-enter value associated with the probability that, considering all previously entered variables, this variable would provide the greatest improvement in classifying ability. The F-to-enter value was considered significant if its associated probability provided the largest likelihood of difference 90 percent of the time. Conversely, the variable was not significant if the variable entered could occur by chance 10 percent or more of the time.[25]

In order to restrict the number of variables in the set of prediction equations, yet allow for optimum assignment of the sampled school districts to either group (H) or (L), three criteria were used to select the ordered importance of significant variables. The F-to-enter criteria were: (1) variables were ordered in importance by descending F-to-enter values associated with the probability that the variable added provided the greatest improvement in classification; (2) the number of variables included was terminated at the point beyond which no single variable F-to-enter had an associated probability of 0.10 or larger; and (3) any significant variable entering after a nonsignificant F-to-enter was retained in the equation if added variables at subsequent steps improved the percent of accurate classification.

Two discriminant functions were developed: a composite function of all socioeconomic, community and in-school predictor variables, and a function of in-school predictor variables. Table 3 is a summary of the discriminant analysis for the composite function and Table 4 is a summary of the in-school function. The broken lines illustrate the step at which the prediction equations will contain all discriminating variables that met the F-to-enter criteria. Notice that the computer program (using the Fisher F as the statistic) was allowed to proceed beyond the cutoff point defined by the above F-to-enter criteria. The fluctuating F-to-enter indicates that at each step the discriminant analysis considered the interrelationships among variables and, on the basis of all previously entered variables, determined the relative power of each variable's contribution in assessing group differences (as opposed to ordinary F-tests

TABLE 3. Summary Information Relative to the Discriminant Analysis of 16 Socioeconomic, community, and In-School Variables

Step No.	Variable No.	Variable Title	F-to-Enter	P	Percent Accurate
1	3	Economically Deprived	9.37	<.01	65.78
2	12	Expenses for Transportation	2.33	NS*	71.05
3	10	Average Teacher Salary	3.82	0.06	81.57
4	11	Expenses for Instruction	4.56	0.04	84.21
5	15	Advanced Certification	1.42	NS	81.57
6	7	Student Mobility	1.10	NS	86.84
7	4	Minority Enrollment	1.35	NS	89.47
8	16	Pupil-Teacher Ratio	0.52	NS	81.57
9	1	Income under $3,000	0.72	NS	86.84
10	5	College Entrance	0.21	NS	86.84
11	9	Beginning Teacher Salary	0.13	NS	86.84
12	14	Staff Preparation	0.21	NS	89.47
13	8	Local Fiscal Effort	0.03	NS	89.47
14	6	Size of School District	0.02	NS	89.47
15	2	Income over $10,000	0.01	NS	89.47
16	13	Expenses for Administration	<.01	NS	92.10

P = Probability of result by chance alone.

*Expenses for Transportation was not significant (NS), but the variable was included in the prediction equation because subsequent entered variables improved the percent of accurately classified districts.

TABLE 4. Summary Information Relative to the Discriminant Analysis of In-School Characteristics

Step No.	Variable No.	Variable Title	F-to-Enter	P	Percent Accurate
1	15	Advanced Certification	4.49	0.04	68.42
2	12	Expenses for Transportation	2.74	NS*	68.42
3	9	Beginning Teacher Salary	3.10	0.08	68.42
4	10	Average Teacher Salary	0.47	NS	76.31
5	11	Expenses for Instruction	2.06	NS	73.68
6	14	Staff Preparation	0.98	NS	76.31
7	13	Expenses for Administration	0.06	NS	76.31
8	16	Pupil-Teacher Ratio	0.02	NS	76.31

P = Probability of results by chance alone.

*Expenses for Transportation was not significant (NS), but the variable was included in the prediction equation because subsequent entered variables improved the percent of accurately classified districts.

of significance between group means). Herein lies the major focus of the analysis of the data, and it provides a rationale for the predictive model developed in this study.

Analysis of Significant Predictor Variables

Composite function. Sixteen socioeconomic, community, and in-school variables were subjected to stepwise discriminant analysis to determine the order to importance in a predictive model. Table 3 contains a summary of information relative to this discriminant function. At step 0, ordinary F-tests were performed to determine the significant differences between high and low productive groups on each variable. Variables X_3, Economically Deprived, and X_{15}, Advanced Certification, were the only significant variables at the 0.05 level. However, when subjected to the stepwise analysis, four variables (X_3, Economically Deprived, X_{12}, Expenses for Transportation, X_{10}, Average Teacher Salary, and X_{11}, Expenses for Instruction) met the F-to-enter criteria previously described. The broken line illustrates the step at which the set of prediction equations will contain all discriminating variables that can be considered significant in their ability to classify districts either to group (H) or to group (L).

The observed order of importance illustrates the impact that socioeconomic characteristics make upon school district productivity. In fact, the percent of pupils receiving instruction in programs funded under ESEA Title I (X_3) had the only F-to-enter significant at the 0.01 level with 1 and 36 degrees of freedom.

It should be noted that, as the degrees of freedom decrease (at descending steps), there is greater probability that a variable entering at that step occurred by chance. When the associated probability becomes 0.10 or larger, the F-to-enter is no longer significant. But occasionally added variables at subsequent steps increase the probability that the next entered variable(s) will improve the ability of the function to classify school districts. This is what happens after X_{12}, Expenses for Transportation, entered as a nonsignificant variable at step 2. At step 3, variable X_{10}, Average Teacher Salary, became a significant variable when its F-to-enter was determined on the basis of all previously entered variables. Likewise, X_{11}, Expenses for Instruction, was significant and the probability of it entering by chance was less than the F-to-enter probability for variable X_{10}. Both variables were retained in the prediction equations because they increased the ability of the predictive model to classify school district productivity.

The prediction equations for the composite function are:

$$H = -528.57(K) -16.88X_3+0.19X_{10}-0.75X_{11}+632.36X_{12}$$

$$L = -494.94(K) -9.05X_3+0.18X_{10}-0.69X_{11}+596.14X_{12}$$

The composite function classified 84 percent of the 38 school districts in the study sample. The efficiency of the predictive equations was tested by calculating the tetrachoric correlation coefficient, r_{tet}. When r_{tet} (.92) was squared, the amount of variance accounted for by the variables in the prediction equations was equal to 84.6 percent. This predictive ability indicated a high degree of relationship between the predicted results and the observed results based on the criterion variable.

The Fisher F-test first considered the interrelationship between variables, and then calculated the relative power of each variable to assess group differences on the basis of all previously entered variables. As noted, the percent of teachers with a master's degree or higher (X_{15}) was one of two variables significant using simple F-tests at step 0. When the analysis attempted to determine the ordered importance of variables on the basis of variables previously entered, X_{15} was not included among the variables meeting the F-to-enter criteria. Three other in-school variables, X_{12}, X_{10}, and X_{11}, were considered more important than X_{15}, when considering the relative contribution made by X_3.

Income variables X_1 and X_2 were not significant predictor variables. Since 40-50 percent of family incomes in both groups were less than \$3,000 annually, variable X_1 did not contribute to assessing group differences. It is interesting to note in Table 5 that the correlation between variables X_1 and X_3 is not exceptionally high (0.46). Also X_2, Income over \$10,000, is inversely correlated (-0.45) with X_3, as expected, but equally as high as the correlation between X_1 and X_3.

In-school function. In order to provide an alternative predictive model containing only those variables over which school leaders have control, a discriminant function was developed without the influence of the socioeconomic and community variables. From Table 4, it can be seen that three variables (X_{13}, Advanced Certification, X_{12}, Expenses for Transportation, and X_9, Beginning Teacher Salary) met the F-to-enter criteria. Without the influence of the potent socioeconomic variable, X_3, variable X_{15}, Advanced Certification was the only significant variable at the 0.05 level with 1 and 36 degrees of freedom. Once again X_{12}, Expenses for Transportation, was not significant, but the variable was retained in the prediction equation because the percent of accurately classified districts did improve when added variables entered the function.

The broken line in Table 4 indicates the cutoff point at which the prediction equations will contain the significant variables. The prediction equations are:

$$H = -451.81(K)+0.14X_9+638.24X_{12}\ 171.39X_{15}$$

$$L = -427.78(K) +0.14X_9+606.94X_{12}+159.09X_{15}$$

The in-school predictive model was able to classify 68 percent of the sample districts. The predictive ability of the in-school function can also be determined by calculating the tetrachoric correlation coefficient. The efficiency of the prediction equations was inadequate when compared to

TABLE 5. Within Groups Correlation Matrix

	Variables								
Variable	1	2	3	4	5	6	7	8	9
1	1.00								
2	-0.78	1.00							
3	0.46	-0.45	1.00						
4	-0.04	0.22	-0.27	1.00					
5	-0.09	0.34	-0.01	0.18	1.00				
6	-0.08	0.12	0.32	-0.25	0.01	1.00			
7	-0.62	0.55	-0.48	-0.14	0.04	0.15	1.00		
8	-0.34	0.45	-0.19	0.42	0.21	-0.29	0.08	1.00	
9	-0.45	0.35	-0.35	0.08	-0.07	-0.10	0.48	0.42	1.00
10	-0.11	0.38	-0.09	0.28	0.34	0.01	0.11	0.37	0.44
11	-0.09	0.35	-0.31	0.16	0.26	-0.09	0.16	0.18	0.29
12	0.28	-0.36	0.14	-0.55	-0.30	0.14	-0.08	-0.60	-0.38
13	-0.02	0.08	-0.21	0.46	0.23	-0.62	-0.18	0.46	0.37
14	-0.20	-0.19	-0.36	-0.28	-0.33	-0.33	0.22	0.06	0.45
15	0.02	0.25	-0.20	0.28	0.56	-0.04	0.17	0.09	-0.23
16	-0.46	0.27	-0.08	-0.15	0.02	-0.16	0.37	0.21	0.31

	Variables						
Variable	10	11	12	13	14	15	16
10	1.00						
11	0.77	1.00					
12	-0.43	-0.28	1.00				
13	0.41	0.45	-0.56	1.00			
14	-0.33	-0.20	0.12	0.15	1.00		
15	0.39	0.42	-0.21	0.06	-0.47	1.00	
16	-0.25	-0.55	-0.10	-0.29	0.28	-0.25	1.00

the composite function. The value of r_{tet} was 0.60. When r_{tet} is squared, the amount of variance accounted for by the variables included in the equations was only 36 percent.

Conclusions and Recommendations

This investigation was an exploratory study. Therefore, conclusions descriptive of the predictive model developed in this study are limited to statements of association. That is, significant predictor variables can be considered associated with high or low productivity but cannot be considered the cause of school district performance.

Conclusions

With respect to the discriminant functions, the following conclusions concerning the predictor variables were apparent:

1. The socioeconomic background of students appeared to be the most potent predictor variable in the composite function. Economically Deprived (X_3) was determined by the number of pupils receiving instruction in ESEA Title I programs. This variable was significantly different between groups. Almost 50 percent of the pupils in the low productive school districts were in ESEA Title I programs as compared with about 30 percent in the high productive group. The results of this study suggest that the percent of ESEA Title I pupils may account for approximately 30 percent of the variations in productivity between school districts and, as a predictor variable, Economically Deprived will be expected to classify

school district productivity at least 65 percent of the time.

2. Three in-school variables improved the discriminating ability of the composite function, but collectively Expenses for Transportation (X_{12}), Average Teacher Salary (X_{10}), and Expenses for Instruction (X_{11}) failed to account for as much variation in productivity between school districts as Economically Deprived (X_3) did alone. However, with the socioeconomic and community variables held constant, the percent of teachers with a master's degree or higher (X_{15}) was able to classify almost 70 percent of districts sampled in this study. As a predictor variable, Advanced Certification appears to account for more variation in productivity between school districts than any other in-school variable tested.

3. An analysis of differences between group means for significant variables in the composite function permits one to generalize about the characteristics associated with high or low productivity. The percent of ESEA Title I pupils in the low productive group (L) was 20 percent higher than the high productive group (H). Group (L) spent less for instruction and had lower average teacher salaries. This suggests that a district with a high percent of economically deprived pupils, but a low per pupil cost for instruction, is most likely to enter the low productive group. Considering signficant variables in the in-school function, group (H) had both a higher percentage of teachers with advanced certification and a higher average teacher salary than group (L). This suggests that the greater

the percent of teachers with a master's degree or higher in districts that also pay higher beginning teacher salaries, the greater the likelihood of high productivity in that district.

Recommendations

The findings of this study suggest the following recommendations:

1. The impact of the pupil's economic status on school district productivity cannot be overlooked. School district pupil attendance zones should be examined to prevent racial and socio-economic isolation of children.
2. The cumulative impact of underachievement has a negative effect on the productivity of school districts. To correct this problem more intensive concentration should be placed on the basic skills, i.e., reading and mathematics, for children who score significantly below expected levels of achievement.
3. The impact of the teacher upon school district productivity suggests that state funding should motivate teachers from low productive districts to seek further training. The conclusions of this study are consistent with prior research efforts which found that the caliber of the teacher was the most important in-school factor affecting school performance.[26] The state teacher salary schedule should include some provision to attract teachers to low achievement districts, as well as incentives such as in-service training model programs to hold teachers in these districts. These should raise the quality of teaching to help the school overcome the disadvantages inherent in a student body with more than 40 percent

of its pupils enrolled in compensatory education programs.

4. The sample size used in this study was not sufficient to develop an adequate predictive model for state funding purposes. A mandatory statewide testing program should be initiated. Using the achievement data from the statewide program and the statistical procedures outlined in this study, the following predictive model could be developed:

$H = K + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6$

$L = K + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6$

where X_1 = Percent of Economically Deprived Pupils

X_2 = Percent of Current Expenses Funded for Transportation

X_3 = Percent of Teachers with a Master's Degree or Higher

X_4 = Beginning Teacher Salary

X_5 = Average Teacher Salary

X_6 = Cost of Instruction per Pupil ADA.

The established set of prediction equations can be used to test future district productivity. District raw scores for the variables in the predictive model are subjected to calculations using the discriminating weights in each equation. The calculated figures for (H) or (L) would be the value for the discriminant function and the smaller of the two figures would be chosen as the prediction of productivity. That is, whichever is smaller, (H) or (L), would be the prediction of high or low productivity.

FOOTNOTES

[1] Thomas P. Wilbur, *Research into the Correlates of School Performance: A Review and Summary of Literature*. See Bibliography for complete citations.

[2] David DeRuzzo, "Identification of Variables to Predict Local School District Productivity," and Scott N. Rose, "A Study to Identify Variables to Predict Local School District Productivity in Two States."

[3] Dewey H. Stollar and Gerald Boardman, *Personal Income by School Districts in the United States*.

[4] Gene V. Glass and Julian C. Stanley, *Statistical Methods in Education*, pp. 141-44. The authors state that r_{tet} correlation has same properties as the Pearson Product-moment coefficient of correlation for dichotomous variables with underlying normal distribution.

[5] Wilbur, p. 3.

[6] Jerolyn R. Lyle, "Research on Achievement Determinants in Educational Systems," p. 27.

[7] James Alan Thomas, "Efficiency in Education: A Study of the Relationship between Selected Inputs and Mean Test Scores in a Sample of Senior High Schools."

[8] James Alan Thomas, *The Productive School: A Systems Analysis to Educational Administration*, p. 3.

[9] Charles S. Benson, *State and Local Fiscal Relationships in Public Education in California*.

[10] Jesse Burkhead; Thomas G. Fox; and John W. Holland, *Input and Outputs of Large City High Schools*.

[11] James S. Coleman; Ernest Q. Campbell; Carol Hobson; James McPartland; Alexander M. Wood; Fredric D. Weinfold; and Robert L. York, *Equality of Educational Opportunity*, p. 21.

[12] Anthony LaVigne, "Differences between Predicted and Actual Achievement Test Scores as an Output Criterion in Secondary Schools."

[13] Ruth Strang; Constances M. McCullough; and Arthur E. Traxter, *The Improvement of Reading*, p. 4.

[14] Albert J. Harris, *How to Increase Reading Ability*, p. 10.

[15] Roe L. Johns and Edgar L. Morphet, *The Economics and Financing of Education*, p. 48.

[16] Morris Osburn, "The Effect of Expenditures per Pupil and Size of School on the Quality of Education in the Secondary Schools of Mississippi."

[17] Thomas, "Efficiency in Education," p. 4204.

[18] Herbert J. Kiesling, "Measuring a Local Government Service: A Study of School Districts in New York State."

[19] Samuel S. Bowles and Henry M. Levin, "The Determinants of Scholastic Achievement, An Appraisal of Some Recent Evidence."

[20] George W. Mayeske, "Correlational and Regression Analyses of Differences Between the Achievement Levels of Ninth Grade Schools from the Educational Opportunities Survey."

[21] Louise Pierce and Richard Mallory, Analysis of Achievement Project Design Interagency Planning for Urban Educational Needs No. 5, p. 80.

[22] Roger D. Farrar and Ralph D. Purdy, Size and School District Organization, p. 4.

[23] DeRuzzo, pp. 55-59; Rose, pp. 54-75.

[24] W. T. Dixon, ed., BMD: Biomedical Computer Programs. See pp. 214a-t for a complete description of the program, including an illustrated problem printout.

[25] Fred E. Schultz and James F. Goggans, A Systematic Procedure for Determining Potent Independent Variables in Multiple Regression and Discriminant Analysis, pp. 25-26. The author suggests the 0.10 level of significance when setting the criteria for selecting the cutoff point.

[26] See the major conclusions cited in the review of related literature and research.

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APPENDIX

TABLE 6. Raw Score Values for Socioeconomic, Community, and In-School Variabls for High and Low Productive School Districts in Kentucky

High Productivity

District	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
H_1	52.5	5.6	33.7	19.5	49.0	1127	-6.8	0.862
H_2	39.4	7.9	22.8	1.2	53.7	2617	15.6	0.428
H_3	36.6	12.2	14.6	7.3	79.7	1930	19.9	0.775
H_4	39.7	6.1	47.4	1.1	18.5	1845	-0.5	0.456
H_5	48.0	5.5	19.1	2.4	20.6	992	4.8	0.501
H_6	44.8	5.0	25.8	0.7	35.4	1932	6.2	0.576
H_7	53.8	4.2	39.0	5.7	28.7	2192	-2.4	0.552
H_8	47.9	4.6	31.5	3.9	30.2	1769	-3.5	0.671
H_9	39.1	7.9	50.7	9.0	39.7	3829	4.2	0.527
H_{10}	51.1	5.4	41.9	1.4	40.1	6883	4.2	0.580
H_{11}	39.1	5.1	18.4	0.5	31.1	1649	2.4	0.294
H_{12}	41.5	10.5	26.7	3.1	38.7	5169	9.1	0.376
H_{13}	32.6	12.7	11.3	2.3	56.0	6547	8.8	0.570
H_{14}	44.1	9.5	26.5	0.3	58.9	2727	7.2	0.422

District	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}
H_1	5650	6927	340	4.6	21.11	0.0	40.4	25.0
H_2	5450	6652	323	10.0	10.19	2.6	37.3	26.1
H_3	5520	7136	394	6.2	19.30	0.0	63.6	23.9
H_4	5495	6785	346	12.6	17.25	2.2	23.1	24.9
H_5	6200	6781	336	7.4	24.15	1.9	11.9	26.8
H_6	5700	6695	350	11.6	16.17	9.5	18.9	23.3
H_7	5465	6945	377	12.7	16.18	2.7	36.0	21.9
H_8	6000	6845	382	11.2	24.75	6.5	18.5	22.1
H_9	5575	6331	304	7.4	14.53	1.2	21.5	26.2
H_{10}	5500	6633	331	9.7	9.57	0.3	21.6	25.2
H_{11}	5475	6503	339	13.3	16.02	4.9	28.0	22.9
H_{12}	5425	6543	337	19.3	7.18	0.8	27.3	24.4
H_{13}	5950	7369	412	6.6	17.97	0.3	40.5	23.3
H_{14}	5445	6604	349	10.0	18.82	0.0	26.7	25.0

TABLE 6 (Continued)

	Low Productivity							
District	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
L_1	58.7	2.7	50.3	5.6	37.2	2131	3.6	0.485
L_2	53.0	4.5	66.6	0.1	26.7	5126	-10.2	0.528
L_3	58.2	4.2	83.9	0.1	54.7	3787	- 8.9	0.526
L_4	26.9	10.6	77.6	0.7	31.8	7447	34.4	0.642
L_5	31.2	9.0	17.0	0.0	25.6	1980	18.8	0.889
L_6	42.5	4.3	24.5	1.5	35.0	1157	15.8	0.408
L_7	56.3	4.2	75.4	1.7	33.6	5839	3.0	0.389
L_8	51.7	2.6	47.0	1.3	32.2	2016	1.8	0.239
L_9	37.2	8.4	21.1	1.5	24.2	1633	25.0	0.828
L_{10}	48.5	4.6	69.9	4.4	35.3	8318	-11.3	0.466
L_{11}	58.5	3.1	51.6	11.2	21.3	2726	-05.4	0.454
L_{12}	45.2	8.8	31.0	24.2	40.0	530	- 6.7	0.801
L_{13}	57.7	2.1	52.3	0.0	26.0	2479	- 6.6	0.338
L_{14}	53.4	4.6	55.1	1.1	34.6	5561	0.1	0.492
L_{15}	49.0	5.0	62.3	0.0	26.7	1947	0.4	0.383
L_{16}	32.2	9.5	54.7	9.3	39.4	1120	-12.8	0.893
L_{17}	49.5	9.7	36.3	3.0	27.0	1371	- 4.1	0.668
L_{18}	46.3	3.8	58.5	1.3	37.8	6456	-11.1	0.407
L_{19}	56.1	3.4	80.5	0.0	65.0	413	-13.6	0.628
L_{20}	41.6	9.2	19.1	7.7	35.3	3058	16.1	0.576
L_{21}	38.4	10.1	21.8	10.8	56.1	3219	15.2	0.587
L_{22}	41.9	8.3	23.2	6.9	31.0	6334	21.6	0.344
L_{23}	41.0	5.6	23.6	9.9	41.4	2225	- 1.2	0.421
L_{24}	51.3	5.1	64.2	0.0	30.3	4239	- 0.7	0.273

TABLE 6 (Continued)

District	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}
	Low Productivity							
L_1	5500	6771	337	8.8	23.48	1.0	23.1	23.5
L_2	5415	6810	354	8.1	12.00	0.8	24.4	24.3
L_3	5500	6467	318	11.1	12.29	1.1	22.0	26.3
L_4	6100	6918	345	5.6	11.79	2.2	17.9	27.1
L_5	6000	6378	295	9.6	15.80	11.0	16.4	30.5
L_6	5630	6486	377	7.0	22.03	8.2	26.2	23.1
L_7	5464	6468	337	8.6	13.83	2.5	20.8	24.9
L_8	5415	6381	318	12.4	14.08	5.0	24.2	24.0
L_9	6000	6465	352	8.7	20.60	9.2	21.1	25.1
L_{10}	5350	6588	339	9.4	15.34	2.7	18.6	22.5
L_{11}	5465	6484	317	10.2	8.60	0.0	27.3	22.2
L_{12}	5724	7018	383	1.3	41.39	0.0	30.0	21.2
L_{13}	5484	6565	352	11.6	15.96	1.5	26.7	21.9
L_{14}	5427	6709	342	10.8	13.15	1.5	33.5	26.5
L_{15}	5625	6562	364	8.7	20.04	2.1	23.8	24.2
L_{16}	5475	6653	323	4.5	21.24	0.0	16.3	26.7
L_{17}	5400	6643	380	7.8	19.95	1.4	20.8	21.8
L_{18}	5464	6366	320	9.6	10.18	4.2	14.0	24.7
L_{19}	5500	6753	364	9.5	30.86	3.8	26.9	20.7
L_{20}	5560	6767	383	11.0	11.13	2.7	21.1	23.5
L_{21}	6250	7439	406	6.7	25.30	2.0	25.5	25.4
L_{22}	5525	6459	358	8.6	10.19	0.0	35.3	23.9
L_{23}	5475	6092	310	9.5	18.57	9.1	21.2	26.8
L_{24}	5483	6661	333	13.5	10.56	1.0	22.9	23.4

Note: Variable titles and descriptions are presented in Table 2. District code can be matched with district name in Table 1.

EXTENDING THE SCHOOL YEAR FOR KENTUCKY SCHOOLS*

In America's early agrarian society, schools closed during the summer months to permit children to help with planting and harvesting of farm crops. Mechanization of farm operations gradually replaced the need for extensive hand labor being provided by children. Today, our industrial urban society does not have peaks of production which would require extensive labor during the summer; yet, industry has been forced to design schedules to compensate for the summer vacations of a major portion of the wage earners.

Historical Development

Prior to 1840, city school systems held school nearly year-round. The year was divided into four terms of twelve weeks each with a week of vacation between each term. The plan was gradually altered to include a vacation at Christmas and at Easter as well as two weeks during the summer. The year-round school began in 1904, in Bluffton, Indiana, with a four-quarter program. By 1915, most of the nation's schools had turned to a nine-month system; however, a few were still trying to implement the year-round system.

Between 1910 and 1935, various forms of the year-round school were organized around the country in such places as Omaha, Nebraska;

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*A study by Morris Norfleet, Vice President for Research and Development, Morehead State University.

Amarillo, Texas; Albuquerque, New Mexico; Nashville, Tennessee; and Newark, New Jersey.

In 1912 the Newark school system initiated a continuous four-quarter plan which is a probable forerunner of the quadrimester plan. Students were required to attend the first three of a four-quarter school year; attendance for the fourth quarter was voluntary. This program was specifically designed to assist the large number of children who were descendants of poor foreign-born parents. The extra quarter helped them prepare for the next quarter. The program was a success but was stopped during the Depression because of the extra cost.

During 1922 a program similar to Newark's was started in Nashville. This program was not considered as successful as the Newark project and was abandoned in 1932. A new high in the number of experimental four-quarter programs was reached in 1925 with about thirteen programs in operation.

The Aliquippa, Pennsylvania school system adapted a rotating four-quarter plan in 1928 in order to stop double sessions and delay the need for a new building program. Students were permitted to attend all four quarters but acceleration was limited to one year. No detrimental effects were noted on students' health or attendance; however, the research is not sufficiently adequate to permit positive conclusions. The program was stopped in 1938 because of parental disapproval as well as other disadvantages which tended to outweigh the economic advantages.

In 1946 extended school year programs were being developed in many cities and extended contracts were being developed for teachers.

The Lexington, Kentucky, schools were involved in a program at that time; however, it has been discontinued.

In 1963 the famed Nova High School in Fort Lauderdale, Florida, started the trimester program. The system now operates on a 210-day basis.

In 1964 the Florida State University Laboratory School developed a trimester with 225 days in the school program. During this period, 1964-67, Ralph L. Witherspoon observed that children in grades K-3 appeared to suffer a detrimental effect from the program.

Variations in the school year were started for numerous reasons, namely, to provide housing for all students, to relieve the shortage of school facilities, to broaden and enrich the curriculum, to accelerate the student's progress through school, and to facilitate movement into the labor force. In 1929, two systems in Pennsylvania--Aliquippa and Ambridge--experimented with a system merely for the need to "stretch the building dollar" by extended use of existing school facilities.[1]

There were early problems encountered by the year-round school program idea: lack of community support because of conflicts with vacation schedules, lack of financial support, and difficulties in scheduling and administering the program and in demonstrating the economic savings in relation to the progress of students.

Among the reasons prompting the current interest in the extended school year program are the soaring cost of education, increasing population, more leisure time for recreation and travel, need to cope with the teacher shortage, overcrowded classrooms, development of urban education, endless array of new knowledge, need for pupil acceleration, and reluctance of today's taxpayers to vote more money for schools.

Extended School Year Plans

In the following discussion a brief description of each of the more common extended school year plans is presented. In the first portion of the discussion, traditional modifications will be discussed. The latter portion will focus on some of the more innovative programs.

The summer school plan, one of the year-round designs, provides a six to seven-week session for recreation, remedial, make-up, and acceleration work. This session is voluntary unless it is compulsory for students who have failed or need remedial help. The program is not usually covered by state aid, but normally is financed by the school district, tuition, or both. Estimated costs for the summer school plan run from four percent to 18 percent of the annual school budget.[2]

The rotating four-quarter plan has been the most popular of the year-round plans for many years. The school year is divided into four quarters with about twelve weeks in each quarter. Each pupil attends three consecutive quarters and may take a vacation during the fourth quarter. With this plan each student attends the same number of days as in the traditional 185-day, nine-month system, but the school is in session throughout the year. Vacations are staggered throughout the school year, permitting three-fourths of the student body to attend school at one time.

One variation of the rotating four-quarter plan allows pupils to attend school for only three quarters while teachers must teach all four quarters. Another variation makes the fourth quarter optional for students, and teachers are employed for four quarters; a third variation makes the fourth quarter optional for teachers and students. The design which makes the fourth quarter optional for students is closely associated with the continuous four-quarter plan.

The primary objective of the rotating four-quarter plan is economy. Theoretically, it would save 25 percent in capital outlay by promoting extensive use of present facilities. The teacher force could be reduced by 25 percent since current enrollment would be three-fourths of the total enrollment. At the same time, teacher salaries would increase about 20 percent to compensate for teaching during the fourth quarter.[3]

Some of the advantages of the rotating four-quarter plan are that the pupil's work is evaluated more often, fewer teachers are required, pupil's achievement is enhanced, the school plant is not idle for 25 percent of the year, and the same school facilities provide education for 25 percent more students.

Some of the disadvantages are, an increase in maintenance costs, increased paperwork, accelerated replacement of books and other materials, difficulty in arranging vacations for staff, and necessity to conduct summer community projects throughout the year.

In Georgia, schools are adopting the four-quarter plan and are dividing the quarters into full-time quarters of 11-12 weeks in length. The number of school days remains the same, but the number of periods in the day is increased to ten. Student movement will be similar to the college situation with students having some Saturday classes and some days with no classes. During the first year, all students will attend the first three quarters and the fourth quarter will be voluntary. The students then choose which two of the next three quarters they want to attend.

Georgia's objective is curriculum improvement instead of economy. The goal is to develop a flexible student planning course sequence and scheduling. An increase in cost of maintenance, instructional material, administrative facilities, and per-pupil transportation fees would offset the savings of operation costs and teacher retirement benefits.

The continuous four-quarter plan differs from the rotating four-quarter plan in that it encourages attendance for all four quarters. Average students can easily excel under this design and those who fail can repeat a quarter and not fail their grade groups.[4]

Some school systems are starting to offer teachers extended contracts to cover pay for the extra workload of a summer session or an extended year. The extended contracts may be available to all teachers, teachers who meet certain requirements, or a percentage of all teachers. Teacher activities vary in the summer from teaching school to attending school or other enrichment activities.[5] The extended teacher contract acts as an incentive for teaching year-round and helps upgrade the teacher role to a full-time, full-fledged, professional status.[6]

To this point, the plans discussed have emphasized better utilization of school personnel (e.g., the rotating four-quarter plan) and the approach to pupil enrichment, (e.g., summer school plan). The extended school year plan attempts to consolidate these with one more major goal, pupil acceleration, to provide educators with an even greater choice of plans from which to choose.

The more innovative extended school year plans involve six basic designs: continuous school year or continuous progress; multiple trails; modified summer school; trimester; quadrimester; and the extended K-12 plan. These designs utilize facilities, personnel, time, and interest in the pupil in different ways: these plans are based on a school year lengthened to 210 days or more; they do not eliminate the vacation period, but shorten it; students are not cycled throughout the school year; no staggered attendance records are required; and all students attend school five days a week.

Other features of the innovative extended school year plans require changes in educational philosophy as well as administrative adjustments and new patterns of family and community living. Major curriculum changes and the addition of days are necessary as well as the implementation of the concept of the continuous progress plan. In some of the plans, course outlines and styles of presentation must be revised to fit the time blocks of a particular design; e.g., the modified summer school session requires a full semester course to be compacted into a six to seven-week time period.[7]

The continuous school year plan proposes a longer school year. Students complete one grade's work in the regular 185 days and then spend the remaining time on the next grade's work. This plan does not require excessive breaks during the year or time modules of "semesters" or "terms," but it provides for normal Christmas and spring vacations plus a six to seven-week summer vacation. The length of the extended school year depends on the number of grades involved and the number of years over which one year of schooling is to be saved.

Operation of the Continuous School Year Plan

Year of Learning Level	Curriculum Adjustment Necessary to Save One Year of Schooling Out of Seven	
First Year of Learning Level 1	Kindergarten 180 Days	Grade 1 30 Days
Second Year Learning Level 2	Grade 1 150 Days	Grade 2 60 Days
Third Year Learning Level 3	Grade 2 120 Days	Grade 3 90 Days
Fourth Year Learning Level 4	Grade 3 90 Days	Grade 4 120 Days
Fifth Year Learning Level 5	Grade 4 60 Days	Grade 5 150 Days
Sixth Year Learning Level 6	Grade 5 30 Days	Grade 6 180 Days

Source: NEA Research Division

The design could be executed within a five to six-year transition period. If gradual implementation is desired during the first year, only K-1 would be on the program during that year while the others remained on the 185-day school year. A new class of kindergarten pupils would be phased in each year until the transition was completed.

The multiple trails plan was developed for the reorganization of the secondary school and directed toward educational and economic innovations and objectives. A transition period is not required and savings are in relation to the number of available classrooms and the length of the school day. It is developed on an eleven-month or 210-day basis, and provides a vacation in July or August along with the normal Christmas and spring breaks. An immediate release of 25 percent of available classroom space can be made available if necessary.[8]

To develop the multiple trails design the length of the current day would be shortened into time modules which would provide less instruction time per week in a given subject, but during a 42-week allotment, the time would be equalized. The multiple trails concept requires considerable curriculum revision which can be organized into units to be completed in four to six weeks.

A significant part of this plan is the hypothetical reserve bank, into which extra or unused time and space can be deposited. These extras can remain in the bank or be drawn upon to provide remedial work, planning periods, or additional courses.[9]

The modified summer plan is another design of the extended school year program which accelerates pupils through secondary school by offering new courses. The time is planned to equal that of a seven to eight week session of one subject during the traditional school year. This plan's cost would exceed that of a regular summer school, but the per-pupil cost of introducing new courses would be less than during the regular school year. If the modified summer school plan is made voluntary, the task of predicting its efficiency would be difficult.

The trimester plan is based on the concept of acceleration for the pupil. The design has three trimesters for a total of 220 days. The pupil does two semesters of work in two trimesters and uses the third trimester for remedial work or acceleration.

The quadrimester design of the extended school year plan is based on 204-225 days, with four 55-day quadrimesters. By lengthening the class periods, average and above-average students can complete a course in three quadrimesters, leaving the last quadrimester for transfer and achievement. This plan was fundamentally designed for the secondary school and an integral part of it is the implementation of the continuous progress plan. At a break between each quadrimester, a student may be moved from one class to another in order to meet his learning level need.[10]

The extended K-12 plan combines features of the other extended school year plans. While providing more and better education for all students, the number of years of schooling is reduced by one. The elementary level would use the savings for mastering fundamentals and enrichment. The savings in the secondary level would be used for the implementation of one of the previously described extended school year plans.

There are many variations of the extended K-12 plan, one of which is the Valley View 45-15 plan. This plan deals with the rotation of four groups (A, B, C, D) on a basis of 45 days of class and 15 days of vacation year-round. This system was implemented in the Valley View School District in Lockport, Illinois, on June 30, 1970.

The 45-15 plan was implemented to defray increasing educational costs. One of the greatest benefits of the 45-15 plan was the resultant savings in new buildings. Two to four percent in operating costs were saved and the present and existing facilities are used to a greater extent each year.[11]

Financial benefits to the teachers can be substantial. A teacher may work on a 45-15 schedule or a continuous teaching schedule with no interruptions for up to 11.5 months. Those who elect to work on a 45-15 plan will be available during the three-week intermission for substituting, thus providing the district with regular and experienced substitutes.[12]

Another beneficial aspect of the 45-15 plan is the opportunity for improving the student's educational program. Each 45 days the student receives an evaluation of his progress and if his needs are not being met at that time, he can attend the same classes during the next 45 days without suffering a loss in academic and social development.

Flexibility in curriculum planning, more practical time sequence for teaching, and reinforcement for retention are other benefits provided by the Valley View 45-15 plan. Valley View's plan has not interfered with school-community relations. In fact, the county's largest taxpayer, the Commonwealth Edison Company, has always supported levies and bond issues to increase the possibility of better education. The administration has implemented the plan with relatively little negative community reaction.[13]

Crucial Points to Consider in the Extended School Year Analysis

Before embarking in a program to implement an extended school year program, local school officials should consider the following crucial points related to the installation and operation of the program:

1. The extended school year will be just that if there are not major changes and improvements in curriculum and the philosophy of education.

2. The needed curriculum revisions will place more demands upon the teachers. In some plans (e.g., multiple trails), the new extended school year plans release teacher time that can be used to facilitate curriculum revision.

3. A longer school year will mean higher teacher salaries.

4. Secondary teachers may need additional training to teach younger students.

5. With a longer school year, traditional summer-school activities of the teachers (returning to college) may be impaired, and many teachers may feel physical and mental strain.

6. An increase in the length of the school year may increase pressure on the student. Questions such as "Are pupils mature enough to graduate a year early?" and "Will they be able to find jobs or enter college?" will plague many educators when they try to decide on an extended school year plan.

7. Today's students are more mature academically, physically, and socially than their parents and have had the opportunity to deal with more varied situations at their age than their parents at the same age. This may help to answer some of the puzzling questions.

8. In the matter of economies of the extended school year plan, immediate savings are not possible. During the transition period, costs will naturally be higher. When this period has ended, classrooms and teachers are released and savings begin to accrue.[14]

The advantages and disadvantages of various plans need to be weighed on their own accord. Figure 1 provides an analysis of the advantages of the extended school year program and also indicates the general impact on the school district which will result in each instance.

EDUCATIONAL FACTORS UNDERLYING THE EXTENDED SCHOOL YEAR PROGRAM

Research Results

Precise conclusions cannot be drawn concerning the effectiveness of the extended school year program on the educational development of students. Research and evaluation designs have been inadequate; evaluation efforts have focused on only a narrow portion of the total program. In too many cases, the program did not operate long enough to provide sufficient data on which to draw valid conclusions. A very critical review of the literature in summary reported "very little factual data" and provided "little evidence to condone or condemn year-round school operations."[15]

FIGURE 1. Analysis of the Advantages of an Extended School Year Program to a Local School District

Factors	General Impact
Utilization of Buildings	A school district could increase its enrollment by one-third by using present facilities under some of the extended school year plans (e.g., the four-quarter plan).
Number of Teachers Needed	Under an extended school year program one-third fewer teachers would be needed if teachers choose to teach all year.
Teacher Salaries	The average teacher could make up to one-third more salary if he chooses to teach all year.
Economic Status of the Teacher	The teacher will be able to utilize his education and professional training full time under the extended school year plan. His economic status will become competitive with many other professions.
Teacher Supply	The need for employing individuals who are not fully qualified would be eliminated. Substitute teachers would be readily available.
Textbook Needs	After the rotational quarter system or a similar system is fully implemented, 25 percent fewer textbooks would be needed.
Utilization of Resource Materials	One-fourth fewer students would be using the library and other resource materials at any one time. Also, there would be less demand for laboratory equipment, audio-visual aids, and even classroom furniture
Guidance Counselor-Student Ratio	The ratio of students per counselor could be lowered immediately by implementing an extended school year program. This would aid in services and accreditation purposes.

FIGURE 1. (Continued)

Factors	General Impact
Entering School Age of Children	Children could enter school near the legal entry date if different entry points are established under the new system.
Vacation Schedules	A family could have the opportunity of working out vacation schedules at varying times of the year. Business and industry would probably welcome the varied vacation schedule.
Teacher Professional Training Options	A teacher would have more opportunities to attend professional training programs at various times of the calendar year.
Vacation Period Employment of Students	The number of students seeking vacation employment at any one time would be greatly reduced.
Juvenile Delinquency	Idleness is a known cause of juvenile delinquency. With more vacation job opportunities and fewer students out of school at any one time, juvenile delinquency could decrease.
Student Dropout	Studies have shown the dropout rate to decrease.
Curricular Changes	Shorter courses can be offered. More time can be spent on fewer courses at any one time providing more in-depth study of a subject area. A student can retake a course more readily. More enrichment courses and experiences can be offered.
Student Progression	A student may be accelerated or retained more easily because of shorter time periods.

Irrespective of the quality of research in a particular area, the knowledge explosion will mandate new learning systems. Dr. W. Scott Bauman[16] addressed this point when he stated:

> "If the birth of Christ is used as a starting point, it is estimated that man's store of knowledge in the world doubled by the year 1750. A second doubling occurred by 1900. With a shift away from an agricultural economy toward an industrial system, man's knowledge doubled a third time by 1950. With the onrush of the scientific-technological revolution, knowledge doubled a fourth time by 1960. At the present, about 600 new books are published every day and about 100,000 journals and magazines are published regularly."

Effect on Age and Types of Children

Specific pieces of research in the Florida studies[17] indicated that when intelligence was held constant, children in kindergarten through third grade tended to achieve less well and possessed more adjustment problems as perceived by their teachers when they attended an extended school year each year for three years than comparable children who attended only the regular school year during the same period of time. The evidence in this piece of research supports findings in other studies that for very young children the extended school year does not produce adequate improvement in achievement and adjustment to justify the added expenditure and effort.

Effect on the Learning Rate of Children

The New York studies clearly indicated that children in the extended school year programs did obtain more education in the extended year than they did in a regular school year. Children who took part in the special programs made greater academic gains than students who did not take part and remained at home, traveled, or went camping. Student achievement in the summer has been equal to, or greater than, achievement in the regular school year.

The extended school year permits students to maintain social contact with friends as well as meet new friends, thereby serving as a much needed socializing process for young people. Students who may be emotionally immature have tended to be less frustrated because fewer adjustments are needed to be made as a result of the lengthened school year.

Research clearly demonstrates that the health of children is not impaired by involvement in extended school year programs. Recent studies support similar findings in the earlier studies in Newark and Nashville.[18] Physically handicapped children in one new program were reportedly in better health after taking part in a lengthened school year program than comparable peers who did not have this advantage. Normal children had better attendance records in summer periods than they did in the regular school year.

In other situations the implementation of an extended elementary school year program has shown that educational advantages tend to override immediate economic advantages. This seems to be true because the extension of the school year helps stem regression and the students can receive more educational training during the formative years of their lives.

In situations where extended school year programs for secondary students have been studied, benefits have accrued in terms of a reduction of failures and dropouts. In the first year of Atlanta's voluntary four-quarter plan, the percentage of failing students dropped 40 percent, saving the district more than $40,000. The year-round program also has aided Atlanta's work with disadvantaged children. According to the Georgia State Department of Education, pre- and post-test studies indicated that the disadvantaged learned faster under year-round programs and more of them were completing high school. As side benefits, Atlanta also found vandalism was reduced considerably.[19]

When learning on the basis of ability is analyzed, studies indicate these patterns:[20]

1. Fast learning students continue to grow academically, but their gains in comparison to their controls, are relatively less than gains made by slow learning students working through an extended school year program.

2. Slow learning pupils with the advantage of extra school time made greater gains over their controls than fast and average learning students.

3. Average learning students show educational gains over comparable peers who are not enrolled in the extended school year program, but their total growth is less than that of slow and fast learning students.

In general, the consensus of most research on the learner has shown that students both regress and advance during the long summer vacation.

Studies in Florida and New York revealed that brighter and socially and economically advantaged students tended to continue to learn during the off-school months, but at a slower rate than when in school.[21] Another implication to the educational community for the extended school year program is that the long vacation schedule is a disruptive force on the learning process and that approximately one month of the school year must be used to reteach the basic skills lost as a result of the vacation period. To correct this, vacations could be shorter and more frequent.

Summary of Educational Impact

In summarizing the educational impact of the extended school year program upon the student and teachers, these points can be made:

1. There are serious questions as to the feasibility and desirability of providing extended school year programs for children in K-3 grades.

2. The high achiever continues to learn and shows benefits from the program, but the average achiever shows little results from the extended school year program. However, enrichment opportunities can be provided for both the high and average achievers. The low achiever can definitely benefit from more days in school. Remedial work can easily be provided for this group.

3. A broader curriculum can be offered with more enrichment courses provided in shorter time blocks. To gain full advantage of the extended school year from an educational standpoint, extensive curriculum revision is mandated with each block of time standing alone as much as possible.

4. The majority of the extended school year programs have been started as a result of a single need to be met, be it education or economics. When the need no longer existed, the program was stopped. Multiple needs should be met in planning and implementing an extended school year program to insure maximum success and longevity.

5. Certain organizational designs are more easily installed than others. The multiple trails design is very difficult to administer because of scheduling difficulties. The rotational four-quarter design tends to be the most popular with students, parents, and teachers. The rotational four-quarter design, with a required attendance of three of four quarters, provides more opportunity for sound educational and fiscal planning.

6. There is need for extensive in-service work with the teachers in developing any form of extended school year design. Female teachers tend to resist adoption of the extended school year plans more than male teachers, therefore making it easier to adopt an extended plan in junior high and secondary levels because of more male teachers at those levels. The extended school year program tends to develop a more balanced staff because of the attractiveness to the male breadwinner of the family.

7. The extended school year program appears to hold advantages for providing remedial work for the slow learner and enrichment opportunities for the average or accelerated learner, depending upon the organizational pattern of the program. Greater flexibility can be provided in curricular organization, and more intensive learning opportunities can be provided.

SOCIOLOGICAL FACTORS RELATED TO THE EXTENDED SCHOOL YEAR PROGRAMS

When discussions start relating to making changes in the academic calendar of a school system, the sociological problems of change will emerge. Unless these are recognized and taken into account, failure is inevitable. These sociological factors can be identified as the family and the community.

The Family

A Ford Foundation study found that the early year-round experiments returned to nine-month systems chiefly because of public vacation pressure.[22] Current social trends indicate that more families are taking vacations at varied times of the year and no longer consider the summer months as the only time suitable for family vacations. The mobility of our society and the advent of the vacation on wheels (camper-trailer) find many traveling the highways south for winter vacations. The varied vacation schedule is more prevalent at the upper socioeconomic levels of our society. In fact, some schools make provisions for students who will leave early and return late for an extended Christmas vacation.

The extended school year could serve as a great leveling force in distributing the mass of vacationers more evenly throughout the year. Expensive facilities could be used over a longer period of time, prices for lodging would not have to be raised during peak vacation period to return a reasonable profit, and the great pressure for the use of our public park system would be reduced. One could list an infinite number of items relating to the sociological problems surrounding the vacation period. These should be recognized and used in a public relations effort to sell the extended school year program.

Parental response to the continuous progress extended school year plan in New York was very favorable.[23] In fact, 88 percent said they would readily re-enroll their children in a similar program. Very few responses were received that indicated conflict with vacation schedules. However, parents did favor a four to five week vacation schedule because children tend to get bored before the end of a lengthened ten to twelve week summer vacation. Most parents enrolled children in the extended school year program to provide them with a better education.

A 1967 study of the modified elementary quadrimester extended school year plan in New York revealed that 75 percent of the parents in the school system expressed satisfaction with their children's progress in school. A similar number indicated that their children had no adjustment problems.[24]

The Community

In planning for the 45-15 extended school year design the following point was made which places emphasis on the importance of the community in developing the innovative program:

> "More than in almost any other educational innovation introduced into the public schools during this century, the community is a powerful factor in year-round operations. Other innovations do not so clearly affect the family. Many families can be unaware of modern mathematics, addition of school counselors, or the addition of new courses. Many families can be aware of but be little affected by school consolidation or the building of school libraries. However, change in school vacation patterns is both highly visible and demanding of family adjustments, sometimes even if the family has no children in school."[25]

Factors to Consider in Planning for Change

In developing a plan for implementing the extended school year program, local school officials should recognize the factors associated with the change process. Schools are constantly in a state of evolution, but normally change is a very slow and painful process. Rapid change is most frequently brought about by the disenchanted or disenfranchised. The most effective change is planned by those who are to participate in implementing the idea, and the degree of receptivity to change is directly related to the ability of the group to see its worth to them. Anxiety seems to accompany change and learning is change. In order for learning to proceed at an optimum level, anxiety must be kept at a level which can be managed effectively.

The major cause of failure of extended school year programs has been due to lack of community support. Proper recognition of the problems of change and differing sociological pressures will make it easier to implement new school calendar designs.

ECONOMICS AND THE EXTENDED SCHOOL YEAR

District superintendents and school board members are probably more interested in possible economies than any other aspect of the extended school year program--not to mention the average taxpayer. Many of the early extended school year programs were started in order to provide economic efficiency. However, history also shows that most of these programs have been long since terminated. If they were so effective in saving dollars, why were they stopped?

The research on the economics of the extended school year program indicates that, when increased utilization of facilities is the basic consideration, a very favorable cost-effectiveness relationship can be identified. Those programs providing an increase in the number of days per student show increased costs. Generalizing the research findings to another situation should be approached with caution and no basic assumptions accepted without careful study of the local situation.

Extrapolation of data is always dangerous and one must differentiate between "paper savings" and a savings in current operational expenditures when the various programs are evaluated. "Paper savings" are often projected for extended school year programs because of the facilities which will not have to be built. During an inflationary trend these savings vanish rapidly when a school district does eventually have to construct the needed facilities.

In order to put this topic in clear perspective a review of programs showing economic considerations will be explained. Generalizations from other programs will be drawn and general observations will be presented in the following discussion.

Dr. Scott Bauman[26] built his case for the extended school four-quarter plan on teacher efficiency and alleviation of classroom shortages. He stated that "because of the extended contracts, the teacher dropout rate would be reduced, and teacher shortages would be alleviated." He contended that schools under this plan should be able to reduce their teaching staff by 25 percent.

Bauman further pointed out that a staggering economic loss in the United States results from the unemployment during almost one-fourth of a year amounting to an economic loss in labor productivity conservatively estimated at $1.5 million per summer. He contended that, with the rapid increase in fixed costs relating to operating a school, school facilities must be used year-round.

George Jensen[27] reported that most educators persisted in stating money could not be saved by year-round operations. He maintained that 20-30 percent could be saved on real estate; school houses, and equipment such as desks, chairs, and buses. He projected no savings on professional salaries but considerable savings on teacher retirement because of the reduced number of teachers. The Aliquippa plan was considered a success from an economic standpoint because during a seven-year period, there was a reported savings of $282,059 on capital outlay for new schools and the related savings on debt service.

In a study in Fairfield, Connecticut, in 1952, projections indicated that the district could save $286,000 if they were to go to a four-quarter plan; however, the plan was not adopted.[28]

The New York studies point out the following areas where economies can be realized in a typical school budget when an extended school year design is adopted.[29]

1. Current expenses could be reduced. Teachers will receive higher salaries, but the total cost for salaries and retirement will be lower because of a decrease in total staff.

2. Transportation costs may be reduced.

3. Capital outlay and debt service expenditures could be reduced. Each classroom saved would result in a savings of $45,000 to $50,000 in capital expenditures and related debt service.

4. Operating costs such as heat, light, power, and insurance are less when school construction is curtailed.

5. Income from tax rolls could be increased. Land and buildings would not be taken from the tax rolls when new buildings are built.

In the Valley View 45-15 plan, Hermansen and Gove[30] estimated their savings have amounted to 2-5 percent. The small margin of savings can possibly be accounted for by the fact that teachers' salaries increased 27 percent. Their maintenance cost remained essentially the same, bus maintenance increased, and administrative costs declined. The new plan eliminated the need for constructing two new buildings which would have cost somewhere between $5 million and $6 million.

The Michigan State Board of Education[31] has conducted an in-depth feasibility study of the possibility of establishing an extended school year program. The study concluded that the implementation of a mandatory four-quarter school plan would save nearly $100 million in construction costs for the district during the years 1971 through 1980.

The Michigan study listed five areas where savings could be anticipated: greater educational efficiency; reduced capital outlay; improved instructional salaries, based on year-round employment; reduced transportation and maintenance costs; and reduced building and maintenance costs.

While these specific studies show considerable savings, an NEA report states that most studies on the twelve-month school year have found that it will cost more money.[32]

Developmental and "Start-Up Costs"

The implementation of a new program usually costs money, and the extended school year program is no exception. In planning for such a program, resources must be allocated to meet these development costs.

Data relating to "start-up costs" encountered by other school systems are scarce and may be misleading; however, the experiences of the Valley View School District[33] may serve as a guide. Their studies indicate a relatively high "start-up" cost because they were the pioneers in the state for such programs. Summary estimates of the developmental and planning efforts came to about $30.00 per pupil over a two-year period. Implementation costs amounted to about $50,000 which did not include additional costs for modifications of buildings for air conditioning. Through extrapolation of data, costs to the school district for planning and implementation of their extended school year program over a two-year period would be from $100,000 to $131,000.

In the New York studies, a determination was made on the potential advantages of an extended school year program the first year, second year, and third year. The plan was to save one year out of six school years.[34]

Financing the Extended School Year Program

One of the greatest detriments to the development of extended school year programs has been the lack of adequate financing. Very few states make any provisions in providing funds for local school districts in developing or maintaining a summer school program or an extended school year design.

California and Connecticut[35] count the average daily attendance of summer school students in the same manner as that of regular term students in determining the amount of state fiscal support for local school programs. Indiana reimburses local school districts in the amount of 80 percent of the cost of operating a summer program. New York supplements local school district's appropriations for summer schools in the amount of $13.00 for each pupil enrolled. With these few exceptions, all other types of extended school year programs have been financed by local tax dollars or supported by a tuition fee levied on each pupil in attendance.

Figure 2 contains a summary of various factors to consider in analyzing the disadvantages of the extended school year program.

Conclusions

Various savings are possible when a district implements the extended school year program, but they may be much less than anticipated.

1. Savings anticipated by the implementation of extended school year programs tend to diminish when a total cost analysis is made. In

FIGURE 2. Factors to Consider in Analyzing the Disadvantages of an Extended School Year Program to a Local School District

Factors	General Impact
Educational Costs	Most studies have indicated that it will cost more money to start extended school year programs. This is primarily due to the fact that the major part of an annual operating budget is composed of salaries.
Maintenance Costs	More large maintenance jobs would have to be done at night by additional staff members.
State Aid	Sufficient funds to finance the program are often not available.
Enrollment	Large enrollments are needed in order to successfully rotate attendance on a four-quarter plan.
Vacation Schedule	Some people still regard the winter months to be a bad time for vacations.
Starting Points in the School Year	If a child is permitted to start school during the quarter he has reached the legal entry age or within 30 days of that period, a family with several children could have a difficult scheduling problem.
Transfer Problems	Moving from one school system to another could cause problems, particularly in our highly mobile society.
Interscholastic Sports	Difficulty in scheduling.

extrapolating data from a school district having an extended school year program in operation, great caution should be exercised because, in all too many cases, the economic advantages amount to "paper savings."

2. Any program offering more days of school per student per year will cost more. This encompasses accelerated and enrichment program designs.

3. The extended school year designs calling for the mandatory attendance of a student in a given number of blocks offer a situation where greater savings can be gained in reduced classroom needs and staff requirements.

4. If economy is the sole motive for implementing an extended school year design, means of reducing staff requirements must be given prime consideration. Thus, a teacher must teach more students in a year's time. The economic situation of well qualified teachers will be enhanced by designs giving them am opportunity to work more days per year. Their professional status will be enhanced, thereby reducing teacher turnover and providing a higher quality instructional program.

5. The total economic situation of our society could be affected by some of the extended school year designs, particularly those which distribute out-of-school periods throughout the calendar year. This would provide balance in vacation loads and in demands on a part-time labor force, as well as a possible reduction of juvenile delinquency.

6. The real savings to a school district do not begin to appear until the program has been in operation three to six years. Additional costs will be encountered in the planning and implementation stages

which tend to eliminate any projected savings during the early stages of the program. The savings are found in school districts having a projected large enrollment increase without adequate buildings, staff, and an adequate tax base to meet these needs. If an extended school year design merely delays construction, inflationary trends may eat up any anticipated savings.

7. Designs requiring a rotation of students work best in large systems having enough students to maintain an efficient unit when one-quarter to one-third of the students are out of school at any one time.

8. It is extremely difficult to determine the cost per pupil for any of the extended school year designs. The projects which show savings simply give the total estimated savings. Because of the methods used in estimating such savings, it is difficult and probably unwise to try to project a figure for savings per pupil. Any school district desiring to compute a per-pupil cost for the additional program should compute a per-pupil, per-day figure, based on the 185-day school year budget, and project the per-day, per pupil cost over the additional block of time. This is based on the assumption that the same amount of input per day is present in each situation.

THE STATE'S ROLE IN FACILITATING THE DEVELOPMENT OF THE EXTENDED SCHOOL YEAR PROGRAM

Since support of public education is the responsibility of the state, a preliminary examination must be made to determine what is possible according to present legislation.

Description of the School Day and Year

Six hours of actual school work constitutes a school day. The daily session, including recesses and intermission, shall not exceed nine hours. The minimum school term shall be 185 school days. The superintendent of public instruction, upon the approval of the state board of education, may extend the minimum term to ten months when the resources of the school funds or contributions by local taxation justify the extension, but no extension shall be made if it reduces the salaries of the teachers below the minimum fixed by law. A local board of education may extend its terms beyond the minimum term set by the superintendent of public instruction. State board regulations make flexibility in school scheduling possible. A minimum of 300 class minutes per week shall be devoted to each full credit course either through five 60-minute class periods per week or through equivalent gross time in a modular schedule. Scheduling for instruction and year-round teacher contracts would not require additional legislation. Many educators are already employed for twelve months: Kentucky employs and compensates all teachers for not less than 185 days. The requirement may be reduced during any year for any district which employs teachers for less than 185 days, in which case the eligibility of a district for participation in the public school foundation program shall be in proportion to the length of time teachers actually are employed. If the school term is less than 185 days for any reason approved by the state board of education, the eligibility of a district for participation in the public school foundation program fund shall be proportioned to the length of time the schools actually operate. It would be necessary, however, to amend the foundation program law in order to distribute funds for a year-round program.[36]

The previous information was published in the Compact (December 1970) as a result of a survey circulated to the governors' offices in the fifty states in October 1970. Pursuant to this report, House Bill 604 was introduced and passed in the 1972 session of the Kentucky Legislature, clarifying the permissibility of the extended school year program in Kentucky. In the bill (KRS 158.065) it was stated that it was "the intention . . . to authorize a local board of education to experiment in the operation of public elementary and secondary schools on a year-round school program basis during the 1972-74 biennium. The primary objective of this legislation is to improve educational opportunities for the children and youth . . . by permitting a greater flexibility of choices in times of attendance and subjects elected. The secondary objective is to permit a more efficient use of school buildings, facilities and personnel."[37]

This bill gives a local school system permission to experiment in the operation of the extended school year program, but it does not provide additional funds for the extended program. The bill merely grants permission to experiment and establish new means of calculating the distribution of funds for average daily attendance, allocation of classroom units, and transportation costs so that the school district would not be penalized by going to the extended school year program. These latter items are critical for school districts considering implementing an extended school year program.

Adjustment of Minimum Foundation Formula

The ADA formula of the minimum foundation program could be adjusted to support the extended school year activities designed to meet the objectives spelled out in Section I of House Bill 604. A weighted average daily attendance formula could be developed for the pupils. For example, it would be weighted by 1.1 percent for the extended school year program when the length of the year exceeds the normal 185-day school year. The formula could contain a sliding scale to adjust to any decrease in cost of the program which might occur after a few years of operation.

Support of Program Designs

Special aid for an extended school year program could be provided when evidence is clearly presented that planning for implementing with extensive curricular revision has been done and that the new design provides continuity of educational experiences for all children.

Planning and Implementation Activities

Planning and implementing a new school year design will require additional expenditures in local districts. The state should take the leadership role in assisting three to six school districts with different characteristics in developing a means of meeting those additional costs. These programs would then serve as demonstration models for other districts. These additional costs could be met in one of several ways:

1. special state appropriations of $50,000-$100,000 per school district for planning and implementation of the program;

2. Title I and II funds of the Elementary and Secondary Education Act (ESEA) for the disadvantaged in the programs;

3. Title III funds of the ESEA for implementation of planned programs;

4. Title V funds of ESEA for planning purposes;

5. local tax effort to support the program;

6. new types of aid which might be developed as a part of federal revenue sharing.

State Leadership

The State Department of Education is charged by law for administering the program of public elementary and secondary education in the state of Kentucky. The state department should provide technical assistance to any school district contemplating an extended school year program, review and approve all proposals for an extended school year program before their adoption by a local school district, clarify the power of a local board has to mandate school attendance in July and August if the extended school year design includes these months, clarify teacher contract situations with extended school year designs, appoint a continual study group to follow the development of programs in Kentucky and act in an advisory capacity, and request any school district desiring to undertake a massive classroom construction program to study the alternative of extending the school year to meet growth needs.

Local Leadership Action

The success or failure of the extended school year program depends on actions of the local school district's patrons because the greatest changes will occur at that point. Local administrators should involve the community and staff in planning for any extended school year program. Because of the extensive ramifications fo this change on a local school district, these steps are recommended:

1. Any school district interested in adopting an extended school year design should appoint a task force to work on the program at least one year before implementation.

2. This task force should consist of representatives of the lay community, school board, administration, faculty, students, and an outside consultant.

3. The task force should identify the central premise upon which the program design is to be based. Is it for economy, broader and enriched educational programs, acceleration, or combinations of these points?

4. A demographic study should be made of population trends to provide a basis for planning.

5. Serious consideration should be given to developing the community school concept which provides for greater utilization of facilities by all ages and establishes the concept of lifetime learning.

6. Curricular revision should be done as a part of the new program.

7. In-service education should be planned for teachers in the transitional period.

8. More emphasis should be placed on enrichment and broadening the educational experience rather than acceleration.

9. If priorities must be set for different groups, consideration for top priority should be given to educational opportunities for the disadvantaged and to kindergarten.

10. Consideration should be given to the modification of school enrollment age to permit entry closer to the child's eligible birthdate in the new design.

11. The long-range impact of the program should be studied carefully before implementation.

Economic Implications for Kentucky School Systems

Direct economic gains related to development and installation of an extended school year program appear to be rather limited. Four summary statements represent conclusions related to consideration of extended school year programs in Kentucky school districts:

1. The greatest opportunity for economies in any extended school year design based on building and staff needs can accrue in the large metropolitan areas such as Louisville and Jefferson County, Lexington, and the greater Cincinnati area where the population of the state is tending to congregate because of job opportunities.

2. Where consolidation of schools in rural areas is being considered, careful study should be made of the feasibility of implementing some extended school year design before construction starts.

3. The advisibility of implementing extended school year programs for the purpose of acceleration is questionable because of other sociological and psychological problems.

4. Extended school year designs exist in many school systems in Kentucky as a result of Title I and III funds being used for summer enrichment programs and funds used for Head Start Programs. If these programs were coordinated into an integrated extended school year, efficiency might be gained.

FOOTNOTES

1. Kenneth L. Hermansen and James R. Cove. *The Year-Round School*. (Connecticut: Linnet Books, 1971), pp. 11-13.

2. Thomas F. Driscoll, "School Around the Calendar," *American Education*, March, 1971, pp. 21-23.

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5. National Education Association, Research Division and American Association of School Administrators, Educational Research Services, "Extended-Year Contracts for Teachers," *ERS Reporter*, (September, 1964).

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7. Driscoll, *op*. *cit*., pp. 21-23.

8. George I. Thomas, *An Introduction to the Multiple Trails Extended School Year Plan* (Albany: University of the State of New York, State Education Department, 1968).

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11. Paul Friggens, "New Impetus for the Year-Round School," *Reader's Digest*, March, 1972, pp. 115-118.

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15. *Year-Round School: Is it Feasible?* Report Published for Department of Education, Michigan, by Northville Public Schools, Northville, Michigan, 1969.

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SCHOOL FOOD SERVICE PROGRAMS
IN THE STATE OF KENTUCKY*

This report for the State of Kentucky deals with school food service programs as one aspect of the overall system of education. In collecting data and information on which to base this report, the two sources were the Kentucky Department of Education and a sample of ten local school districts. The time and efforts of personnel in these agencies have been sincerely appreciated.

Legal Framework

The legal framework underlying school food service programs provides for participation by both public and private schools under the supervision or regulation of the State Board of Education. The school food service program is administered with uniformity for all children in the state. Funds are distributed to school districts and participating schools on a formula basis considering (for federal funds) the number of meals served or (for state funds) the average daily participation.

Perhaps the most serious drawback to Kentucky law relative to school food service programs is the absence of legislation providing state tax sources for school food service. In its absence, one must assume that the program derives its support as a part of the overall budget for education. Although under State Board of Education Regulations the school food service programs may continue indefinitely, a statutory mandate for the program would appear desirable.

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*A study performed by William H. Castine, Assistant Professor of Education, Florida A & M University.

Most of the statutory law dealing with school food service is permissive or enabling in nature, although some of the law is regulatory. By contrast, most of the State Board of Education Regulations impose controls or minimum requirements on school food service within the framework of state law and federal regulations. Modifications of the legal structure do not appear to be necessary in assuring effective school food service programs in Kentucky, although schools not participating in such programs should be strongly encouraged to participate.

Program Participation

Of the 1,535 public schools in Kentucky, 1,410 (92 percent) participated in the National School Lunch Program (NSLP) during 1971-72; only 21 schools (1.4 percent) offered no food services. Among private schools, 198 (66.5 percent) of 298 in the state offered the NSLP; an alarming 25.2 percent (75) of the private schools offered no food services in 1971-72.

Procedures for disbursing federal and state monies to local districts and participating schools appear to be satisfactory. As pointed out earlier, these funds are distributed on a formula basis. The data to be entered into the formula are submitted regularly from local sources to the Department of Education, processed, and vouchers are submitted to the State Treasurer, who returns checks to the Department of Education for mailing.

During 1971-72, school food service programs in Kentucky were operated at a total cost of almost $16.7 million (See Table 1). Of this amount, $273,920 was allocated for administration within the Department of Education; including this figure, a total of $440,000 was used for state administration of school food service programs. An additional $600,000 was used for program purposes at the discretion of local school districts. Thus the State of Kentucky contributed slightly over $1 million of the $16.7 million expended.

TABLE 1. School Food Service Program Expenditures, 1971-72

Program	Public Schools	Private Schools	TOTAL
Lunch	9,705,882	1,323,529	11,029,411
Breakfast	2,394,158		2,394,158
Special Milk	1,472,772	200,832	1,673,604
Non-Food Assistance	209,184	28,524	237,708
SFSPC (Day Care)	304,711		304,711
Administration and Supervision	*	*	1,040,000
TOTAL	$14,086,707	$1,552,885	$16,679,592

*No breakdown available

Very few constraints appear to be placed upon funds allocated for state-level administration of school food service programs in

Kentucky. No specific restrictions were noted in the information on which this report is based.

School districts should be encouraged to initiate measures beneficial to the program, such as consolidation of services, centralized purchasing, increased local funding, improved financial control, increased availability of programs, and increased student participation in programs. Efforts should be exerted to stimulate expansion of breakfast programs in all schools and lunch programs especially in private schools.

State Administration

The position of the Division of School Food Service relative to other units within the Kentucky Department of Education appears quite sound. The Division's placement within the Bureau of Pupil Personnel Services seems entirely logical and functional.

State administration of school food services includes thirteen professional and seven clerical positions detailed in the organizational chart of the Division. Each professional staff member is responsible for more than 100 different schools (on the average). The desirability of increasing the field staff seems apparent and is recommended as a means to improve the effectiveness of program offerings.

Qualifications of school food service consultants were not analyzed. Requirements should be commensurate with those of similar personnel in other divisions of the Department of Education; if such requirements are not presently in effect, they should be enacted without delay.

The Kentucky Department of Education administers five school food service programs for both public and private schools. The principal components are the child feeding programs, including lunch, breakfast, and special milk. A summary of participation in these programs has been made for the ten sample school districts and for the state as a whole (See Table 2).

Sample Districts

The total sample was comprised of ten school districts. Only one reasonably large school district (Pike County) was included in the sample; this district had 33 schools all of which participated in the NSLP during 1971-72. By most standards, this district would not be classified as large; however, it includes approximately one-half of the schools and one-half of the average daily attendance (ADA) represented in the study. Furthermore, the sample represented only about 4.0 percent of the schools and 4.5 percent of the ADA in Kentucky.

From Table 2, the average daily participation in the school lunch program among the sample districts ranged from 51 percent to 90 percent with a weighted mean of 74 percent. The range of ADP is quite wide. This could be due to factors such as the nature of the community; more likely, however, factors directly related to the school lunch program may influence the ADP. If increased ADP is sought, the first approach to the problem should be to make careful studies of the relationships between selected program factors and ADP. Such considerations are beyond the scope of the present study.

TABLE 2. School Food Service Programs in Sample Districts and for the State of Kentucky.

School District	Lunch Schools	ADA	ADP	Per Cent	Free and Reduced Price ADP	Per Cent
Caldwell County	4	2,477	1,462	66	208	14
Fairview Independent	3	1,148	814	71	131	16
Fulton City Independent	1	327	166	51	69	42
Gallatin County	2	916	791	86	146	18
Jenkins Independent	3	1,017	630	62	247	39
Jessamine County	5	3,503	2,950	84	515	17
Paducah Independent	11	5,617	4,268	76	1,350	32
Pike County	33	15,081	11,232	75	5,555	50
Robertson County	1	450	403	90	132	33
Scottsville Independent	2	506	321	63	143	45
Sample Total	65	31,042	23,037	74	8,496	37
State Public	1,410	646,932	497,658	77		14
State Private	198	48,961	32,435	67		9
State Total	1,608	695,893	530,093	76		13

TABLE 2. (Continued)

School District	Breakfast Schools	BADA	BADP	Per Cent	SMADA	SMADP	Per Cent
Caldwell County	0				2,477	271	11
Fairview Independent	3	1,148	465	41	814	950	117
Fulton City Independent	0				417	276	66
Gallatin County	0				916	0	0
Jenkins Independent	3	1,017	606	60	**	1,331	**
Jessamine County	0				3,503	4,175	119
Paducah Independent	11	5,617	1,882	34	5,617	953	17
Pike County	15	6,216	3,072	49	14,175	8,689	61
Robertson County	1*	27	27	100	450	127	28
Scottsville Independent	2	506	170	34	266	351	132
Sample Total	35	14,531	6,222	43	28,635	17,123	60
State Public	551	212,851	95,783	45	606,275	215,400	35
State Private					98,696	35,065	35
State Total	551	212,851	95,783	45	704,971	250,465	35

*Available to Head Start and Kindergarten Classes only.

**Data unavailable.

The availability of breakfast programs in Kentucky is rather low. Just over one-third of the schools offered breakfast and these schools included less than one-third of the ADA. In the sample, over half the schools made breakfast available to slightly fewer than half the pupils. Participation in the breakfast program averaged 45 percent in the state and 43 percent in the sample, with a sample range from 34 percent to 100 percent.

Statewide the special milk program was available to fewer public school students than was the school lunch program. Among private schools, the reverse was true. This is not surprising, as schools without food service frequently offer special milk. Approximately 35 percent of pupils to whom special milk was available participated in the program statewide. The sample mean of 60 percent may be in error; if so, the source of error was most likely in responses to the question used to elicit data relative to SMADP. On the basis of other information in the questionnaire, a correction was made in the special milk data. After doing so,the sample mean ADP in special milk was calculated to be 43 percent.

Part of the data analysis represented an attempt to relate the financial cost of the program to the number of meals served. Accordingly, the per meal costs of food and labor (the major components of total production cost) were calculated from data provided by the sample districts (See Table 3). In addition, the labor cost and the production rate in meals per hour were tabulated exactly as received.

A rather wide range existed among the districts with respect to per meal costs of labor and food, as well as in the meal production rate.

TABLE 3. Lunch Costs by District

School District	Number of Lunches Served	Total Food Cost	Per Meal	Total Labor Cost	Per Meal		Meals Per Hour *
					Calcu-lated	Reported	
Caldwell County	217,766	$ 57,032	$.263	$ 39,971	$.184	$ .16	10.0
Fairview Independent	117,057	14,269	.122	22,547	.192	91.66	12.0
Fulton City Independent	29,216	4,734	.162	9,722	.334	.338	9.2
Gallatin County	142,380	26,347	.178	17,493	.122	.10	11.3
Jenkins Independent	135,709	18,744	.138	12,871	.095	.18	11.3
Jessamine County	513,477	132,205	.254	74,014	.144	.07	12.0
Paducah Independent	718,381	183,705	.256	151,246	.214	.221	12.0
Pike County	1,875,744	637,298	.340	275,475	.147	.11	18.0
Robertson County	68,581	9,770	.143	7,105	.104	.129	18.0
Scotsville Independent	54,558	6,730	.123	7,613	.140	.182	13.74
Sample	3,872,869	$1,090,834	$.282	$618,057	$.160	$ .149 (excludes Fairview)	12.75

*Not reported; calculated from other data.

Some districts included the cost of all food or all labor (not just lunch) in their figures.

The data indicate a need to investigate the reasons for such wide variability in food costs and production rates. The latter problem well may be the more serious, since labor cost is an inverse function of production rate. That is, the more meals produced per hour, the lower the total labor cost will be at a given hourly wage. The savings to be realized from increased efficiency should be substantial. An investigation should be made to determine what factors contribute to high production rates and what factors inhibit high production rates.

Variations in food costs may stem from the quantity or quality of foodstuffs purchased. High volume purchasing unquestionably reduces unit costs; at the same time, convenience (labor-saving) foods are more expensive than unprepared foods although the former do reduce labor costs. A balance must be struck between food costs and labor costs so that the total per meal cost is minimal. In considering how to minimize costs and maximize quality, cooperative buying among groups of school districts should be explored.

Additional factors to be considered in analyzing the school food service program are the relationships between costs and participation, between menus and participation, and between type of food (i.e., convenience or unprepared) and participation. These analyses are beyond the scope of the present study and will require a much larger sample of school districts in order to be valid.

Program Support

Free and reduced price meals were provided in compliance with regulations of the U.S. Department of Agriculture and Kentucky Department of Education. Each school district agreed to follow these recommendations and submit appropriate documents describing procedures for implementing this phase of the program. Even so, some interesting variations occurred among the ten sample districts. The reduced prices for lunch were either 15 cents or 20 cents. One district established a full price of 15 cents for all paying pupils and eliminated further reductions; free lunches were available to those who could not afford to pay the 15 cents. Several procedures were used to protect the anonymity of recipients of free or reduced price meals, ranging from personal recognition through ticket or token systems to donation of cash to such recipients. Any of these methods are acceptable if implemented properly.

Local tax support was not reported by any of the ten sample school districts in giving data on sources of income to school food service programs. Several districts, however, indicated that certain items were paid for by the local board of education (e.g., utilities, equipment repair and maintenance, administrative, supervisory and clerical personnel). These funds most likely were derived from tax sources, but apparently were not reported as such since they were paid directly and were not part of the cash flow of the school food service program.

The lunch pricing structure in Kentucky was slightly lower than that in many states. Among the sample districts studied, all schools at a given educational level (e.g., elementary) charged the same price although prices often varied among levels. Means for the sample districts were compared with statewide figures reported by the Department of Education (See Table 4).

TABLE 4. Lunch Price Structure

		Elementary Schools	Junior High Schools	Senior High Schools
Highest Full Price Charged	Sample	30.5¢	32.5¢	32.5¢
	State	40	40	45
Full Price Charged Majority	Sample	30.5	32.5	32.5
	State	35	35	40
Lowest Full Price Charged	Sample	30.5	32.5	32.5
	State	15	30	30

Pupil payments were the chief source of income to school food service programs in the sample, although this was not true of each district. Heavy reliance upon pupil payments has been the rule in school food service since the inception of the program; yet as other goods and services are provided to students without charge (e.g., textbooks and transportation), adequate nutrition surely is worthy of consideration as an integral part of education.

SUMMARY

The State of Kentucky has an effective school food service program, as evidenced by the extent of pupil participation in the program. Furthermore, Kentucky's commitment to the expansion and continued improvement of the program is demonstrated in part by its initiating a study of the program. The state should be prepared to take action in order to assure progress toward these ends. Accordingly, the following recommendations are offered for consideration:

1. Establish a state goal of state and local funding of school lunches for all children and implement a study to determine the methods and amounts to accomplish the goal.
2. Immediately investigate the feasibility of providing state and local funds to support the food service program to provide relief for the present situation whereby the child who pays for his meal is subsidizing the child who is receiving a "free lunch".
3. Seek to improve the information systems presently utilized at both the state and local levels.
4. Seek new means of encouraging additional public and private schools to participate in the available school food service programs and of encouraging increased pupil participation in present program offerings.
5. Investigate the feasibility and probable benefits of cooperative buying for school food service programs in small contiguous school districts.

6. Undertake an analysis of labor costs and meal production rates with the aim of increasing efficiency and reducing costs.
7. Investigate the relationships between pupil participation and such program variables as food costs, labor costs, production rate, etc.; if relationships are found, manipulate program factors in such a way as to increase pupil participation.

COST OF DELIVERING EDUCATION

A Review of Data*

The problems of financing public elementary and secondary education are numerous. First, in almost every part of the country, education revenues are inadequate and are becoming even more so at an alarming rate. Second, there are severe inequalities in levels of expenditure per pupil and in educational services among school districts within states as well as between states. And third, related to both of the previous problems, the tax burden for the support of public education is unequally shared.

The problem--inadequacy of school revenues--has until recently, received most of the attention. There have been numerous reports of cutbacks in educational services, reduction of staff, and even the temporary closing of schools because of the loss of anticipated revenues.

Recognizing the basic inequalities in the capacity of different school districts to raise revenues, and the difficulty that some school districts have in raising sufficient funds for even a "minimum" program, states have historically provided funds to school districts to supplement their locally raised revenues. Most states have distributed some funds as a flat grant to school districts, which means that an equal dollar amount per pupil is distributed to every school district in the state regardless of its wealth or poverty; through a formula which attempts to equalize on the basis of the fiscal ability or capacity of a district to raise local revenues; or some combination of the above.

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*Materials presented in this report were excerpted from data presented to the Citizen's Committee by Dr. Dewey Stollar, Professor and Chairman of Educational Administration, University of Tennessee, Knoxville, Tennessee.

The current state education formulas are inadequate because they do not take into account differences in the cost among districts for the same service.

The purpose of this study was to examine cost differentials between districts and also costs incurred by school employees teaching in various communities. Economists have contended that living costs vary between urban and rural areas but do not vary to an appreciable amount between urban and urban areas and the same would be true of different rural areas. This has been an assumption rather than a research finding and therefore requires study.

While the dollars expended for specific functions vary considerably among districts this study will attempt to determine the kinds and amounts of variations between districts and cost of living differentials for staff members.

Because of problems in finding comparable data for all districts included in the sample, some data are for metropolitan areas within the selected counties. Other data are for groups of census tracts that approximate school districts. Other data are for Standard Metropolitan Statistical Areas. All of these factors influence conclusions which could be drawn from the data. A further limitation would be that it will be difficult to generalize from the data to a larger sample. The sample of districts to be studied was selected by Kentucky State Department personnel. The districts were selected to show contrast rather than being a representative sample of the particular state.

COST OF LIVING

Inter-City Cost of Living Index for Ten Kentucky Cities

Table 1 shows cost of living indexes as of the first quarter 1972 for nine Kentucky cities and Cincinnati; the latter is used as a proxy for Northern Kentucky. These indexes are based on the same price data and weights used in computing the Kentucky Consumer Price Index. The average of all ten cities is the base used to compute the index for each city. This weighted average has been used to represent the average for the state of Kentucky.

Column (1) of the table shows the city indexes arranged in descending order according to the cost of living. Column (2) shows the differences between the average cost of living in the state and the cost of living in each city. For example, the cost of living in Lexington is 5.7 percent above the state average and the cost of living in Ashland is 13.9 percent below the state average. Similarly, the cost of living in each city can be compared with the average for the state.

Cost of living differentials can also be made between cities. The cost of living in Lexington is (105.7 - 103.6 ÷ 103.6 = 2.03%) 2 percent higher than in Louisville, and living cost in Lexington is (105.7 - 86.1 ÷ 86.1 = 22.8%) 22.8 percent higher than in Ashland. While inter-city comparisons can be made in this manner, it is easier to compare all cities to a common base such as the state average.

TABLE 1. Inter-City Cost of Living Index

City	Index (1)	Relative to State Average (2)	
Lexington	105.7	5.7%	above
Louisville	103.6	3.6%	above
Northern Kentucky*	102.9	2.9%	above
STATE AVERAGE	100.0	0.0%	
Bowling Green	98.9	1.1%	below
Henderson	96.3	3.7%	below
Corbin	91.7	8.3%	below
Hazard	91.7	8.3%	below
Paducah	90.6	9.4%	below
Hopkinsville	90.0	10.0%	below
Ashland	86.1	13.9%	below

*Cincinnati was used as a proxy for Northern Kentucky.

Table 2 is a more comprehensive table which shows cost of living indexes of six major groups of goods, as well as the total. The most recent period is more significant because of relatively stable prices. Because of this only the most recent quarter was shown. The first column indicates the city index as per the previous table. The second column shows the cost of living index for food for selected Kentucky cities. Ashland has the highest food prices with a relative index value of 108.208. This occurs even when Ashland has the lowest overall index. The state, as a whole, is given a weighting of 100.0. The table shows that Lexington has the highest housing costs with a relative weight of 105.662. Ashland has the lowest housing cost as per the index. Bowling Green has the highest utility costs with a weight of 124.129 while Northern Kentucky or the area

TABLE 2. Comprehensive Cost of Living Index for Selected Kentucky Cities

Component Weights		0.20	0.35	0.15	0.12	0.08	0.10
City	City Index	Food	Housing	Utilities	Transportation	Health	Miscellaneous
			Quarter 1, 1972				
Ashland	86.116	108.208	85.688	91.195	75.081	100.271	85.383
N. Kentucky	102.867	107.743	103.173	90.539	110.743	106.348	100.264
Henderson	96.330	94.538	96.254	93.983	78.937	106.925	93.621
Lexington	105.678	98.951	105.662	103.393	104.960	111.969	103.910
Louisville	103.605	99.519	104.128	94.398	93.394	89.636	106.071
Paducah	90.634	96.361	89.943	105.426	83.756	102.929	95.403
Corbin	91.747	100.638	91.477	98.688	108.815	96.473	82.507
Bowling Green	98.839	98.951	97.904	124.129	121.730	106.348	102.749
Hazard	91.736	103.340	90.812	110.989	132.332	110.905	83.412
Hopkinsville	89.900	97.288	88.727	120.009	126.549	103.309	87.504

Source: Price quotations for items in indexes for Ashland, Northern Kentucky (Cincinnati as proxy), Henderson, Lexington, Louisville, and Paducah were supplied by the Chambers of Commerce in those cities. Similar price quotations were collected from the remaining cities by the Office of Business Development and Government Services, University of Kentucky.

in close proximity of Cincinnati has the lowest utility cost with a weight of 90.539. Transportation costs are highest in Hazard (132.332) and lowest in Ashland (75.081). Health costs deviate from a high of 111.969 in Lexington to a low of 89.636 in Louisville.

Table 3 shows occupations and earnings for selected Kentucky counties for 1970. Jefferson County has the largest number of employed persons while Wolfe County has the smallest number of persons employed. It must be remembered that school employees must compete with other citizens for goods and services. For this reason school personnel salaries must be commensurate with comparable occupational groups if school employees are to maintain an adequate standard of living. For these reasons school employee salary scales must be compared with professional, managerial and kindred workers. Any salaries below this level will leave teachers at a disadvantage in any cost of living index. These are also legitimate functions of an educational cost of delivery system.

Table 4 shows a summary of economic characteristics by counties. This is important both to the total cost of delivering an educational system and to the cost of living index for school personnel within these particular counties. For example, school personnel must compete economically with other wage earners in the particular area for goods and services. In addition, income is a good measure of ability to support an educational system. Median income per family ranged from a high of $9,819 in Jefferson County to a low of $2,694 in Wolfe County or a deviation of $7,125 which is 72.6 percent. Wolfe County also had the largest percentage of families in the poverty classification (under $3,000 income) 59.0 percent. Campbell County had only 8.0 percent of the families in this classification.

TABLE 3. Occupations and Earnings for Selected Counties: 1970

		Median Earnings for Selected Occupational Groups					
County	Total Employed, Over 16	Male Over 16	Professional, Managerial and Kindred Workers	Labors, Except Farm	Female Over 16	Clerical and Kindred Workers	Operatives, Including Transport
Boyd	17,229	$8,175	$10,391	$5,526	$3,308	$4,052	$3,462
Breathitt	2,944	3,600	6,297	3,042	1,997	3,070	3,500
Calloway	10,099	5,626	8,519	3,203	2,375	2,364	2,323
Campbell	32,183	7,601	10,236	5,404	3,673	4,364	3,675
Clark	9,149	6,491	9,860	3,806	3,338	3,726	3,847
Daviess	29,668	6,833	9,981	4,391	3,568	3,766	4,123
Fayette	71,165	7,191	10,460	4,082	3,701	4,074	3,779
Fulton	3,435	4,693	7,449	3,205	2,305	3,291	3,541
Hardin	15,341	6,470	9,000	5,109	3,453	4,254	3,855
Harlan	8,515	5,682	7,299	2,915	2,611	3,143	2,900
Hart	4,679	4,035	7,375	3,938	2,822	3,656	3,303
Jefferson	268,635	7,671	11,166	4,947	3,718	4,100	4,438
Laurel	7,217	4,852	7,693	3,487	3,179	3,517	3,339
Martin	1,973	4,182	5,519	3,328	1,829	2,417	1,283
McCracken	21,392	7,165	9,845	3,621	3,201	3,621	2,938
Monroe	3,894	3,174	8,370	3,076	3,014	3,303	3,326
Pendleton	3,334	5,946	8,231	4,852	2,952	4,184	2,388
Pike	15,108	5,995	7,711	3,737	2,694	3,521	1,623
Pulaski	11,040	4,844	8,580	3,481	3,292	3,486	3,838
Union	4,813	6,607	8,309	4,826	2,747	3,836	2,904
Wayne	3,719	3,104	6,342	1,881	2,833	3,015	2,991
Wolfe	1,056	3,114	5,587	2,625	1,862	1,389	2,025

TABLE 4. Summary of Economic Characteristics by Counties: 1970

	Families		
		Percent with Income of	
	Median Income (Dollars)	Less Than Poverty Level	$15,000 or More
Boyd	$8,744	12.0	14.5
Breathitt	3,176	54.9	2.9
Calloway	6,725	16.5	9.1
Campbell	9,527	8.0	15.5
Clark	8,125	14.1	11.4
Daviess	8,627	11.9	13.4
Fayette	9,597	9.7	20.3
Fulton	5,546	26.3	3.5
Hardin	7,263	13.8	10.2
Harlan	4,682	36.2	4.4
Hart	4,957	27.5	5.0
Jefferson	9,819	8.9	19.5
Laurel	4,802	34.4	5.1
Martin	3,415	52.7	4.1
McCracken	8,204	13.2	12.3
Monroe	4,042	40.3	4.6
Pendleton	7,067	14.9	4.4
Pike	5,429	31.8	4.7
Pulaski	5,185	29.2	7.5
Union	8,122	15.9	10.4
Wayne	3,292	50.1	2.6
Wolfe	2,694	59.0	1.9

Even though many contend that living costs vary between urban and rural areas, data are not currently available which reveal that costs vary in a uniform fashion among areas within a state. As shown in a later section of this report, patterns are essentially inconsistent.

An examination of various services and goods associated with cost of living for school personnel revealed that a uniform pattern of highs and lows did not exist among the cities and urban areas of the state. A city may have a high index for one item, but have a low overall index.

In a state-wide survey of a "market-basket" including everyday products, The Courier-Journal found some rather interesting disparities in a survey covering 68 stores in 32 Kentucky counties.[1] The cost of items averaged $17.06 in the Southeastern Kentucky towns of Hazard, Harlan, and Whitesburg. The same items, with only minor exceptions, had an average cost of $16.39 in 7 towns in Western Kentucky.

Grocery prices in Southeastern Kentucky--an area of low income, high unemployment, and massive government relief--were higher than in any other section of the state. In contrast, prices of various everyday items were lowest in Western Kentucky, an area near the top in per capita income and employment in the state. In contrast to the contentions of some urban dwellers, food costs appeared to be higher in some of the more isolated rural areas than in the metropolitan areas.

The survey showed wide variations in prices of similar products within the same region. Chain spokesmen attributed this to separate pricing patterns and separate chain divisions operating within the state and varying degrees of local competition.

The data from The Courier-Journal survey indicate that a cost of living adjustment based solely on personal income would be somewhat suspect because residents of high income areas can actually buy their "market basket" of food for fewer dollars in some instances.

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[1] Frank Ashley, "Contrasts in Costs", The Courier Journal, Lousiville, Kentucky, April 8, 1973, p. 1+.

The per capita personal income for a school district does not appear to be a reasonable proxy for cost of living, for school personnel must compete economically with other wage earners for goods and services and therefore must have an equivalent wage to maintain an equivalent level of living. However, the problem is more complex, for some rural local districts must provide an added salary incentive to attract needed personnel.

The research findings in this study do not justify development of a cost of delivering educational services index for use in apportioning state funds. Sufficient data are not available to develop the index. Preliminary evidence does suggest that variations in per pupil expenditures for educational programs and services do exist among districts, but a large portion of these variations may be more attributable to disparities in wealth rather than to identifiable differences in dollars required to provide equivalent programs and services or to maintain a similar standard of living.

Recommendation

In the absence of identifiable "cost differentials" which can be incorporated into the Kentucky Foundation Program, the Kentucky General Assembly should fund a comprehensive study of the cost of delivering educational services with the study focusing on the following questions:

a. What salary levels must be paid to instructional personnel in different areas of the state to assure an equivalent quality of personnel?

b. Are there differences in the cost of living which favor certain districts?

c. Among school districts, or areas of the state, are there real cost of living differences for the same standard of living?

d. Will some areas have an advantage in attracting personnel simply because they are viewed as a more attractive area in which to live and raise a family?

e. Do districts with the highest cost of living also possess the more attractive living conditions and cultural environments?

f. What is the net effect of the cost of living versus the effect of the wealth of the community and its attractiveness and living conditions?